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JULY/AUG 1998 VOL. 1, NO. 4

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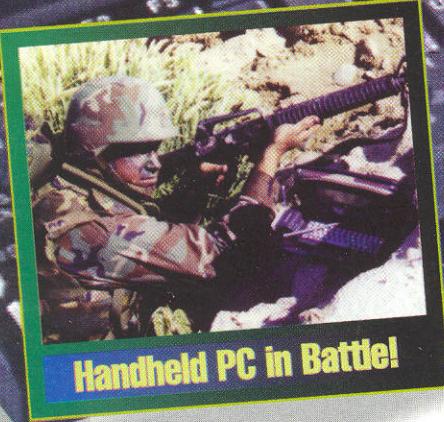
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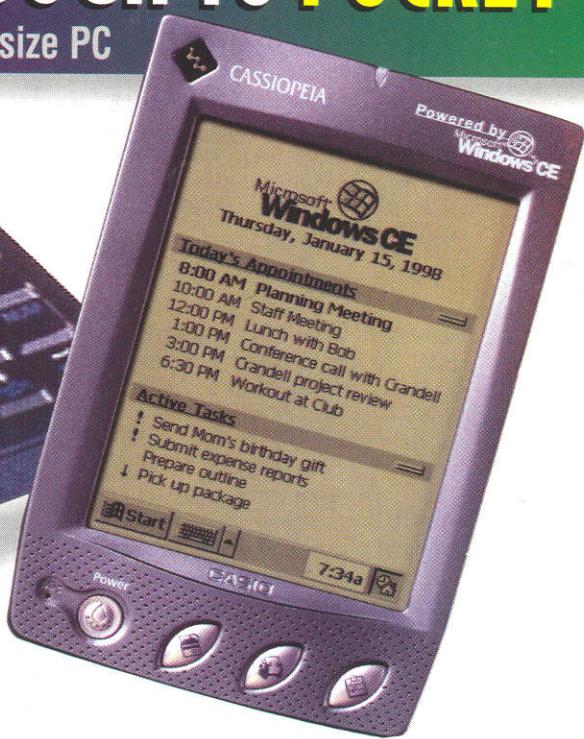
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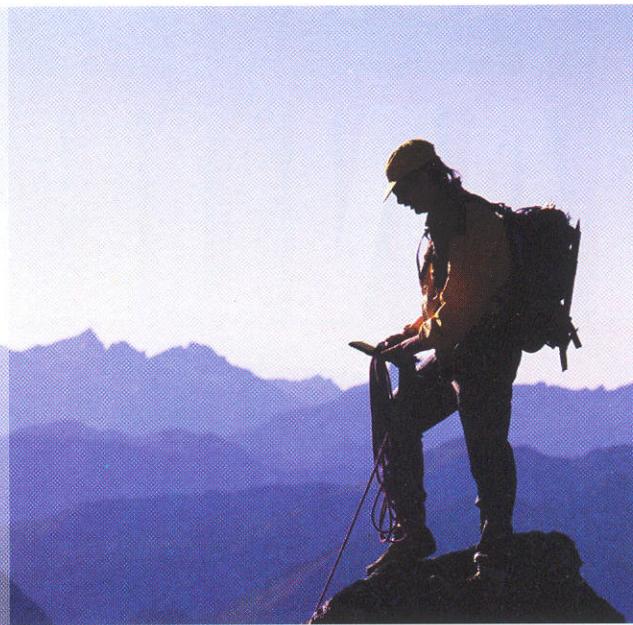
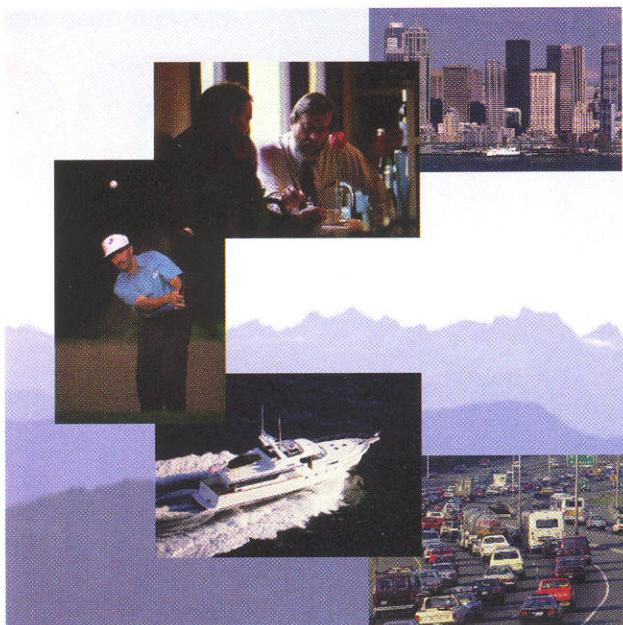
ANDREW SEYBOLD
The Marriage of Communications and Computing

STEVE MANN
Microsoft's Windows CE Developer's Conference

Where Does Windows CE Fit into the Enterprise

An interview with **MICROSOFT'S DOUGLAS DEDO**

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Enterprise Access Product Family

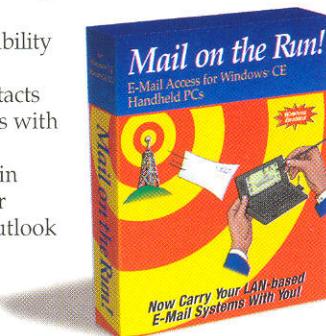
Mail on the Run! software provides unprecedented remote access to the world's most popular LAN-based e-mail systems, including Microsoft Mail®, Lotus® cc:Mail™, Microsoft Exchange Server, Lotus Notes® Mail and Novell GroupWise™. The complementary *All in Sync!*® product allows remote synchronization of calendaring and scheduling data. *MobileApps*™ allows a user to visually create applications that remotely access corporate databases. All products can be used over wireline and wireless networks. Now you have access to all your critical information from a Windows® CE handheld PC or Palm PC (H/PC), no matter where you are.

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Mobile Application Builder with Database Access

River Run Software Group and TechBridge Technology Corporation have joined together to create *MobileApps*, a powerful new technology for application development. *MobileApps* provides developers with an easy-to-use visual GUI builder, enabling them to create customized applications for immediate query, data update and data synchronization to any ODBC-compliant database, including Microsoft Access, SQL Server, Lotus Notes, etc.

Multiple Platforms

River Run's family of remote enterprise access software products support all versions of handheld and Palm PCs running all versions of the Windows CE operating system. *Mail on the Run!* also runs on Windows 95 laptops for wireless remote access to LAN-based e-mail systems, and *Mail on the Run!* and *Corporate Connection*™, River Run's toolkit for database access, also run on Apple Newton MessagePads.

Multiple Connectivity Options

Flexible communication options provide a major advantage of River Run's Enterprise Access product family. You can access your e-mail, calendar and corporate data directly or over the telephone network. By adding a Motorola PM100D wireless modem card, you can access this same information over ARDIS™, the nation's largest two-way wireless data network, covering 90% of all business activity in the US, Puerto Rico and the Virgin Islands.

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JULY/AUGUST 1998

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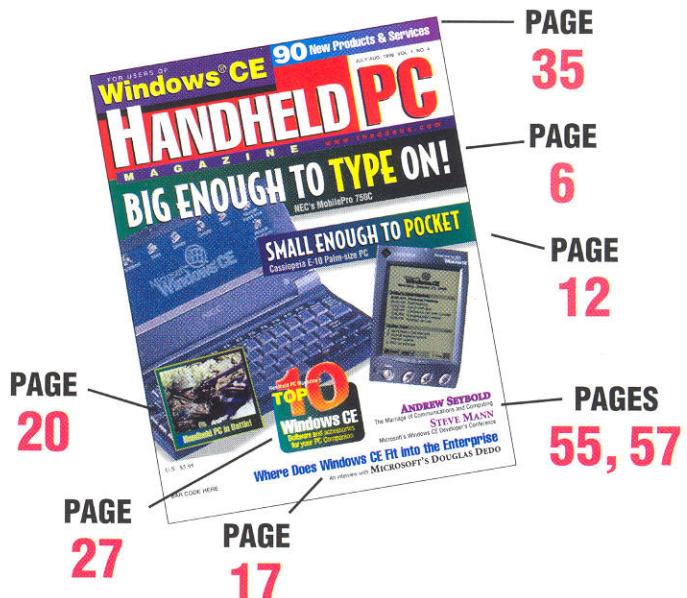
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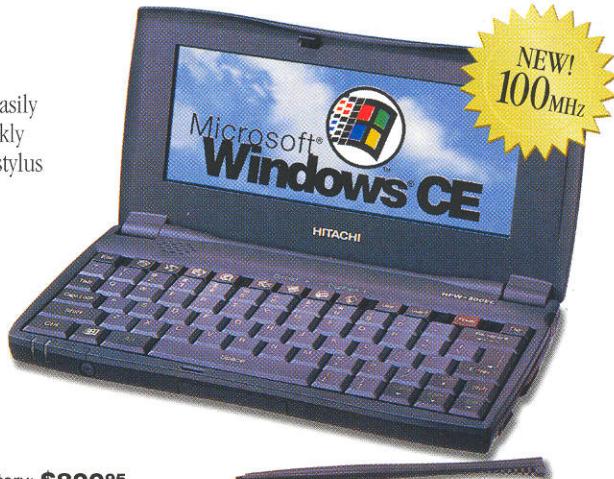
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MP912511 Hitachi HPW200EC 16MB, 33.6Kbps fax/modem, rechargeable Lithium battery: **\$899.95**

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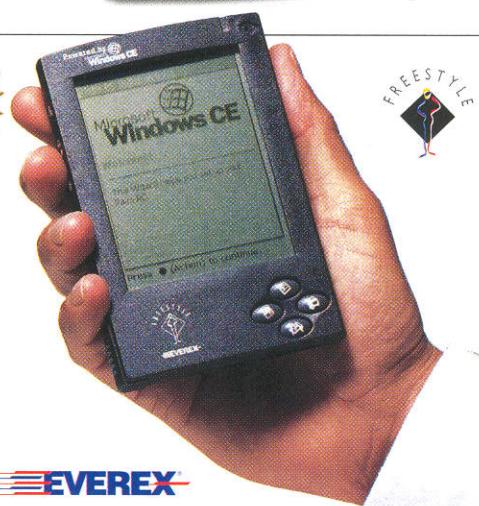
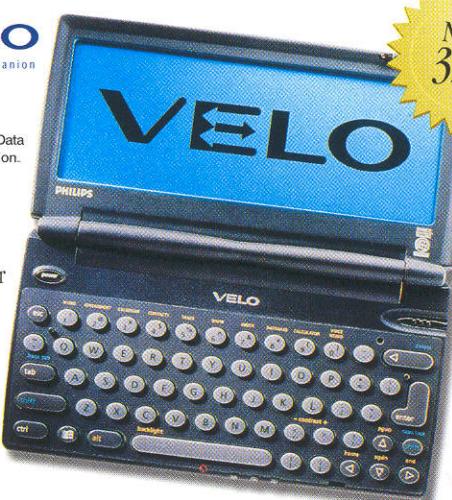
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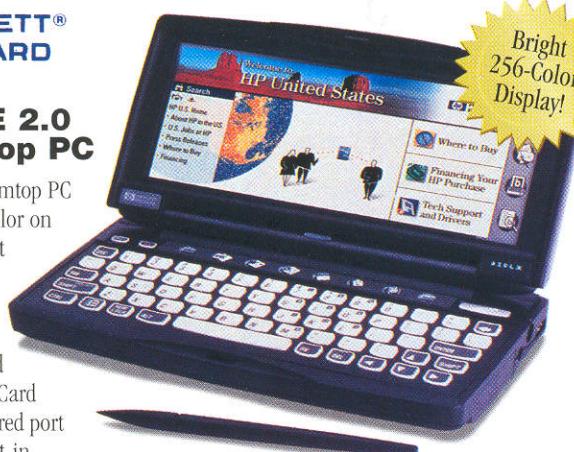
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MP940124 HP 620LX Color Palmtop PC with Docking Cradle, AC Adapter & Cable
Our Price: **\$849.95**

For a complete listing of Windows CE hardware and software visit:

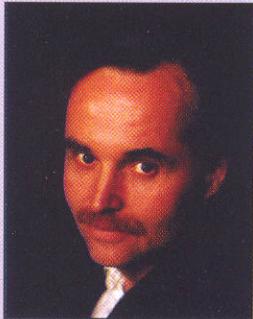
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From The Editor

Rich Hall

Size does matter" proclaim movie posters these days. But Windows CE users have known this for sometime. In the case of the H/PCs and now the Palm-size PCs, what mattered was "small," not "big." This may be changing a bit.

One of the main articles in this issue is a review of the NEC MobilePro 750C, one of the newer color-screen H/PCs. What's important about the new MobilePro is not its screen, but its keyboard. You can touch type on it! Mobile users have been asking for touch-typeable keyboards ever since the first H/PCs were introduced over one-and-one-half years ago. Now they have two models of the MobilePro and offerings from Hitachi and LG Electronics. This is an important development in the evolution of H/PCs.

Another important development in the Windows CE world was the shipping of the first production models of the Palm-size PC. We include a review of the Cassiopeia E-10, a well-built, easy-to-use proponent of the "small size is better" school of Windows CE development. Everex has also shipped its Freestyle Palm-size PC, and by the time you read this many of the manufacturers listed in our "At A Glance" section will have Palm-size PCs shipping around the world.

Size also matters in "Enterprise computing." Mobile devices must be small enough to carry with you, and powerful enough to do the job. And while no single device can satisfy the needs of all mobile professionals, the variety of PC Companions offered by the different manufacturers covers most needs. If you want to find out more about where Windows CE fits into the enterprise, check out the interview with Microsoft's Douglas Dedo.

There's one enterprise where size, speed, and ruggedness are particularly important — the military. In this issue's user profile, U.S. Marine Corps Major Jim Cummiskey shows us how this unique group of "mobile professionals" uses the H/PC to enhance its "situational awareness" and keep in touch. Many of the issues raised apply to any group of mobile professionals.

Size matters a lot in terms of the number of developers supporting the Windows CE operating system. More developers means more Windows CE software and hardware solutions for end users and organizations. In April I attended Microsoft's second Windows CE Developer's Conference. It was two-to-three times the size of the previous year's conference. Well over 2,000 developers attended three days of sessions and exhibits. Guest columnist Steve Mann reports in more detail on the conference.

Finally, size matters in terms of the number of accessories and software programs available for your PC Companion. The basics are built into the H/PCs and Palm-size PCs, but there are an ever-increasing number of products available from independent vendors that let you personalize your PC Companion. I thought that after a while our "PC Companion Products" section would get smaller, but its size is increasing. In this issue alone we list over 90 new products and services.

With so much available, which product do you choose? To help with this, we've started a regular "Top 10" section in *Handheld PC Magazine*. In each issue, contributing authors will talk about the ten most important additions they've made to their PC Companions, and why they recommend them.

Size does matter, but quality matters more. Thanks to the many people who have contributed information and material to this and previous issues.

Rich Hall



July/August 1998

Increasing Your Personal Power by Expanding Your Handheld PC's Potential

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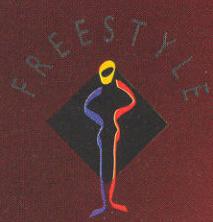
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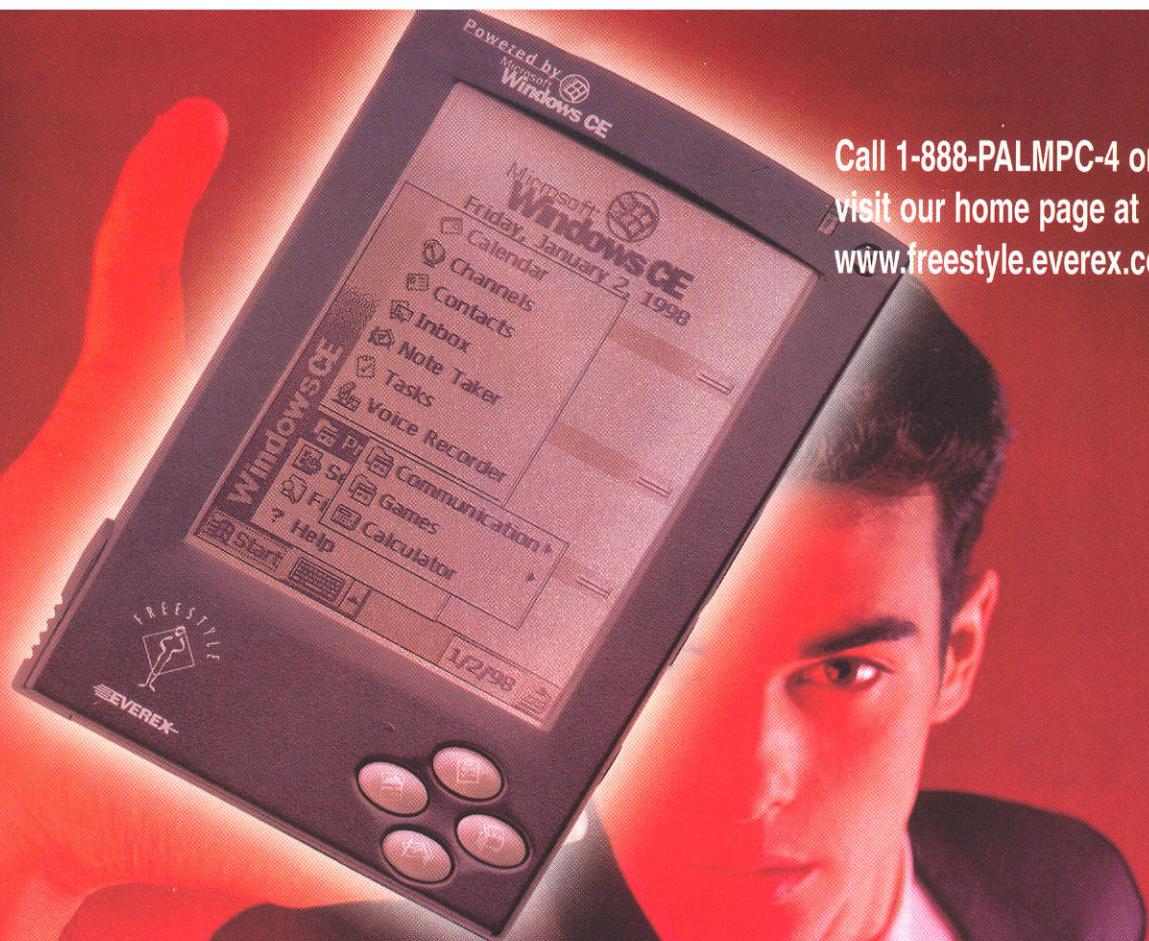


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NEC's MobilePro 750C

For Some Users, BIGGER is BETTER!

By Rich Hall

I can type on it without looking! I'm 35,000 feet above the southernmost tip of Nevada, just crossing into Arizona. Occasionally I glance out at the snow-covered Sierra Nevada mountain range, but I continue to type out this introduction in Pocket Word, even when looking out the 757's window. You see, I'm using an NEC MobilePro 750C, and it has one of the largest, most typeable keyboards of any H/PC. I'll come back to that, but first, let's take a quick look at the MobilePro.

A large, color-screen H/PC

The MobilePro has a slick silver and gray two-tone case. It's attractive, and stands out on a dark background like a desktop or restaurant tabletop — more noticeable and less likely to be left behind accidentally.

It has an 8" diagonal color screen that's relatively easy to read (except in bright sunlight). A color screen sure makes games and web browsing look nice, and it would probably come in handy if you made Pocket Power Point presentations directly from the MobilePro. I like it because it makes ordinary applications like Pocket Outlook and Pocket Word easier to read. Color screen H/PCs use a lot of power. You'll only get up to 8 hours of use with the MobilePro 750C's



high capacity Lithium-Ion battery fully charged. Contrast that with 25 hours of use on monochrome-screen MobilePro 700, from an ordinary pair of AA Alkaline batteries. If you need to use your H/PC away from a power source for long hours at a time, and still want a big keyboard, check out the MobilePro 700 and see if you can live with the monochrome screen.

The MobilePro 750C sports an 80 MHz NEC VR4111 processor. It doesn't have the fastest MHz rating of the H/PCs, but it's plenty fast, going quickly from one application to another and loading long documents quickly. Don't pay a lot of attention to megahertz ratings. Get a unit, test it, and see if it feels fast enough for you.

The MobilePro 750C comes with the

traditional interface ports, including a Type II PC Card slot, a CompactFlash card slot, a serial port and an IrDA infrared port. It also comes with a VGA port that lets you connect your MobilePro to a video monitor or projector and display color PowerPoint pre-



Screen 1: The MobilePro's Quick Launch feature lets you set the H/PC up to launch built-in or user-installed applications with the press of a button.

“Where'd you get that?”

“Where'd you get that?”

“Where'd you get that?”

(Despite all the interruptions, our color handheld will make you more productive.)



NEC MobilePro™ 750C

- NEC V4111™ 80MHz MIPS Processor with 24KB Cache
- 16MB RAM (upgradable to 32MB)
- 16MB ROM
- Built-in 33.6Kbps Modem
- 256-Color, 640x240 pixels, 8" Diagonal LCD Screen
- 80-Key QWERTY Keyboard with 10 Programmable Function Keys
- Built-in VGA and Serial Ports plus an Infrared Interface
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Additional questions you're likely to hear: Does that come standard with a full-color LCD screen? A keyboard you can actually type on? A built-in, high-speed, 33.6Kbps internal modem? Remote Internet access? A PC card slot? A compact flash card slot? A built-in VGA port for Pocket PowerPoint presentations? Handwriting recognition software? A rechargeable 8-hour lithium ion battery? Answers: Yes.

No wonder *The Wall Street Journal* said, "...of all the new handhelds, only one starts to approach my dream machine: NEC's MobilePro 750C..."

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Using Pocket Word

I usually don't mention the built-in applications much in these reviews, but since it's easier to touch type on the MobilePro, you'll probably be using Pocket Word more often — at least, I did.

I work with words and don't spend much time formatting articles. I'll discuss ideas with our graphic designer, leave suggestions in the body of the text, and let him do the actual layout. Occasionally I'll bold or italicize words, but not much more than that. Hence, Pocket Word has all the features I need in a word processor.

The two Pocket Word features I like most are the built-in spelling checker and the adjustable font size. The spelling checker is accessed from Pocket Word's Tools menu (or by pressing Ctrl 7). Start the spelling checker and it searches your document for misspelled words (or words that are not in its dictionary). A tool bar appears in the document, letting you select from a list of possible replacements, ignore the word, ignore all occurrences of the word, or add the word to the spelling checker's dictionary (see Screen 2).

The other very handy feature of Pocket Word is its adjustable font sizes. This is particularly useful to help avoid eyestrain. Press Ctrl-A to select all the text in a document. Then access the Font size pull-down list and select a larger font size (try 16) and press OK. Your document suddenly becomes more readable (see Screen 3).

I wrote a good bit of this review on the plane home from the Microsoft Developer's Conference. I spent a couple more days writing parts of two others, using Pocket Word on the MobilePro exclusively. I adapted quite nicely to the keyboard and got

very fast. In fact, after a while I found that I could type faster on the MobilePro than on my desktop's full-sized keyboard. I believe this is because the keys are closer. You don't have to reach as far and once you get used to the size of the keyboard, you get faster.

sentations in a larger format. The MobilePro 700 also has this capability and even though the 700 has a monochrome display, it can project color presentations.

The MobilePro 750C comes with an AC adapter, a VGA monitor cable, and an RJ-11 telephone cable for its built-in 33.6 modem. These items are also on the optional accessories list, along with a spare Lithium-Ion battery, a 32 MB PC memory card, a 3-pack of replacement styluses, a carrying case, and the MobilePro "UltraCare" extended service program.

cation with one of the 12 F-keys on the top row of the keyboard. Then, launch your most-used applications with a single key-press.

MobilePro also comes with ParaGraph's Calligrapher handwriting recognition software pre-installed. It lets you enter characters with pen strokes on the screen. It's a fine program, but I don't quite understand why, with such a typeable keyboard, NEC chose this particular application to pre-install.

Its most important feature is its keyboard

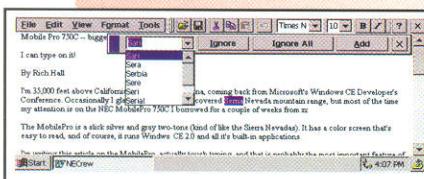
I'm a writer and editor, and touch-typing is a basic skill of my trade. True, the keyboard on the MobilePro 750C (and its monochrome-screened cousin the MobilePro 700) isn't as big as the one on a desktop or notebook computer. But I was touch-typing immediately, almost at full speed. As I mentioned above, I could type easily while I looked away from the keyboard. I only looked back at the keyboard to find the backspace key when I occasionally made a mistake.

Of course, there are no free lunches. You pay for the larger, touch-typeable keyboard with the added size of the MobilePro. At 9.6 x 5.4 x 1.25 inches and 1.88 lb., the MobilePro is almost tied with the new Hitachi HPW-200EC as the largest of the H/PCs. You can still hold a MobilePro 750C in your hand, but it's large and heavy enough to drop easily, so be careful. I was able to slip it into the outside pocket of my jacket, but not easily. You're better off carrying the MobilePro in your briefcase.

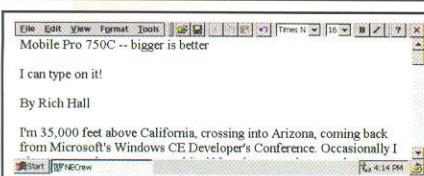
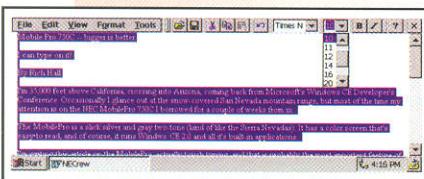
First of many?

There are comparably-sized sub-notebooks running Windows 95. Toshiba's Libretto is one of them. I suppose it's an option for someone who absolutely has to run Windows 95 applications on a device this size. But the Toshiba is more expensive and its battery life is not that great. I don't think there are that many people who absolutely need Windows 95 and its applications. Most mobile professionals need communications capabilities, a personal information organizer and a word processor. H/PCs provide this and more. They are less expensive and have 3-5 times the battery life.

Rumors abound about "Jupiter," but Microsoft is saying nothing. This next version of Windows CE is supposed to be targeting the sub-sub notebook sized computer. Depending on which rumor you believe, it will be released next Fall, or in the Spring of 1999. Take a close look at the MobilePro



Screen 2: Pocket Word's spelling checker lets you find misspelled words in documents, before you transfer them to your desktop PC or email them to associates.



Screen 3: Select the Font option from Pocket Word's Format menu and you can change the font size of a document to make it more readable.

Built-in software

Of course, the MobilePro runs the Windows CE 2.0 operating system and all of its built-in "Pocket" applications. Specific details are in the sidebar, but it's worth mentioning a couple features.

The MobilePro comes with a built-in utility that lets you program its "Quick Launch" keys. Access this "MobilePro Settings" icon in the Control Panel and select the Quick Launch tab (see Screen 1). Associate any built-in or user-installed appli-

750C. It's probably the size of a whole new class of similar H/PCs.

I'd use this one

I spend most of my time behind a desk, writing and editing articles using the full-sized keyboard of a desktop PC. However, if I had to spend a significant amount of time on the road, or working in different locations, I'd want something like the MobilePro 750C to carry with me. It's lightweight, I can send and receive email, create simple spreadsheets to track projects, and write and edit articles. Most importantly, it has a keyboard I can use for an extended period of time.

NEC has offers two models of its Windows CE 2.0 H/PC. The MobilePro 700 has a monochrome screen and slightly better battery life. The MobilePro 750C comes with a color screen. Both have the large, touch-typeable keyboards.

Other H/PCs are fine for what they do, but if you have a lot of text or data entry to do and don't mind carrying your H/PC in a briefcase, take a close look at the NEC MobilePro 750C. ■

NEC MobilePro 700 and 750C

NEC was the first H/PC manufacturer to come out with a touch typeable keyboard. Hitachi has recently followed suit, and LG Electronics is marketing the Hitachi unit under their own label (see "At-A-Glance," page 50, for more on the Hitachi and LG units).

NEC MobilePro 750C - \$899

A color-screen Windows CE 2.0 H/PC with an 80 MHz NEC Vr4111 MIPS CPU, 16 MB RAM, 16 MB ROM, and large touch typeable keyboard. The 750C comes with a built-in 33.6 low-power hardware modem; VGA-out port; Type II PC Card slot; one CompactFlash slot; serial and IrDA ports; built-in microphone and speaker; QuickKeys program to launch applications; AC adapter; PC connectivity cable; RJ-11 modem cable; Lithium Ion rechargeable battery.

NEC MobilePro 700 - \$599

A gray scale screen version with 54 MHz NEC Vr4102 MIPS CPU, 8 MB RAM, 16 MB ROM, and the same large touch typeable keyboard. Other features similar to the 750C except that the 700 is powered by two AA alkaline batteries and goes for up to 25 hours per pair. The 700 has an option NiMH rechargeable battery option.

Software includes the Microsoft Windows CE 2.0 operating system, accessories, and "Pocket" applications.

Both the MobilePro 700 and 750C come with a CD-ROM disk with the following bonus software:

- IntelliSync from Puma — lets you synchronize your MobilePro H/PC with a number of PC-based personal information management, contact management and group scheduling applications, including Lotus

Organizer.

- pcANYWHERE CE from Symantec — remote control software that lets your H/PC remotely access files, applications and information from another PC.

- Virtual Courier from MicroBurst — lets you access your office LAN-based e-mail, such as cc:Mail or MS Mail through an optional modem or wireless connection.

- QuickNotes from CIS — turns the MobilePro H/PC into an electronic notepad which collects all of your handwritten thoughts, ideas, and drawings and organizes them by date.

- SPRYNET CompuServe connection — provides quick access to CompuServe.

- bFAX and bPRINT from BSQUARE — adds faxing, printing, and other communications tools to your MobilePro.

- Filler Pro & Filler Central from JetForm — adds database and data collection capabilities to your MobilePro.

The MobilePro 750C comes with NEC's "UltraCareSM" service, providing free 24-hour technical support plus 72-hour, door-to-door repairs for the first year. You also receive 90 days of free software support. An optional 3-year extended warranty is also available.

Accessories for the NEC MobilePro include: AC Adapter; Serial Cable; Docking Cradle; Lithium-Ion Battery Pack.

MobilePro Handheld PCs are available direct through NEC NOW. For more information, or to find the nearest NEC reseller, contact NEC NOW at 888-8-NEC-NOW; Web: www.nec-now.com/necnow/

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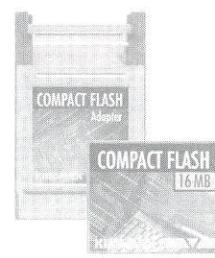
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Designed for maximum accessibility of your HPC, this Voyager case is ideal to carry your HPC on your belt.

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Ref.KL008

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Ref.W001

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- Velcro fasteners hold HPC in position while in use
- Credit/business/memory card sections
- Secure zipped pocket for valuable items
- Detachable handstrap and battery/pen holder

(Size: 7.2x3.9x1.2")

HPC Executive -Pro Leather Wallet

Ref.W002

This smart black wallet wraps around your HPC to offer it excellent protection. It provides:

- Space for 12 credit or business card
- Mesh window for memory card
- Secure internal zipped slip pocket for valuable items
- Holder for pen/AA batteries

(Size: 7.2x3.9x1.2")

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Off The Shelf and In Your Palm

The Cassiopeia E-10 Palm-size PC

By Rich Hall

Out of the box the Casio E-10 is a fast, easy-to-use Palm-size PC. A big megahertz number looks impressive on paper, but doesn't always translate into speed. Fortunately, the E-10 has both a big megahertz number (a 100 MHz NEC Vr4111 CPU) and snappy performance.

The unit comes with backup and main batteries pre-installed, so I played around with it for a while before noticing the stern instruction (on a piece of paper labeled "Important") about replacing them immediately with spares, also included. I did so, went through the rest of the set-up procedure, and started again to play with the E-10.

The Casio E-10 is attractive and small, fitting easily in your palm or pocket. It comes with a slipcase for extra protection. The slipcase is good if you carry the E-10 around in a briefcase or purse, but it adds too much bulk to easily slip into your pocket.

The E-10 has four buttons below its touch screen. One turns the unit on and the other three launch commonly used applications (Calendar, Tasks, and Contacts). A button on the left side of the unit lets you activate the voice record application. One of the best things about these quick launch buttons is that you can customize them to launch your most important applications.

Two additional controls on the left side of the E-10 let you maneuver through drop-

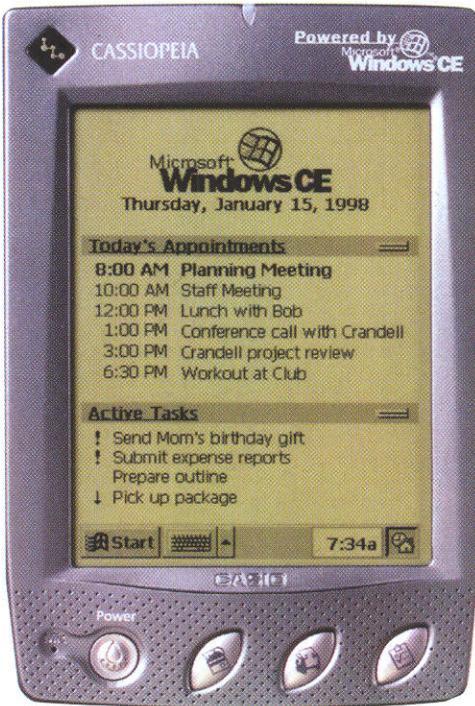
down lists and menus. The concept is great and they are useable as is. But these buttons are recessed to avoid the unintentional pressing of them. As a consequence, I have to feel around a little with my thumb to find them.

I'll have a few more things to say about the hardware towards the end of the review. If you'd like more of the hardware specifications, see the E-10 listing in our "At-A-Glance" section on page 50.

The more I use the software, the more I like it — and want more!

I did a review of the Windows CE operating system and applications for the Palm-size PC in the May/June 98 issue of *Handheld PC Magazine*. You can also find that review on our Web site at www.thaddeus.com. I just wanted to add a few comments about some of the features.

Word completion is great! I really appreciate this built-in feature. As you enter text, the utility follows what you are entering and pops up what word it thinks you are



entering. If it's the right word, all you have to do is tap on it and it gets entered. Once you get used to this feature, it really speeds things up.

Jot's Help feature handy when you need it. I also still like the help feature for the built-in handwriting recognition program. The Palm-size PCs come with handwriting recognition capability built in (CIC's Jot program). But Jot expects you to write characters it's way. Almost all of the



ABOUT THE AUTHOR

Rich has been writing and editing articles about portable computers for over 10 years. He's been the managing editor of five different portable and palmtop computing magazines and has been Editor of *Handheld PC Magazine* since its first issue in 1997. He and his wife Lucinda have been married 22 years. They have two children: Robert (12) and Ella (9), who occasionally help Rich review products. Rich's email address is: rich@thaddeus.com.

Palm-size PC's Built-in Applications

The Casio E-10 and all other Palm-size PCs have the same set of Windows CE applications built into them. As a stand-alone product without any additional software, the Palm-size PC is a very functional unit. Below is a brief description of the built-in applications. For a more complete description see page 14 of the May/June 98 issue of *Handheld PC Magazine*. You can also go to Microsoft's Palm-size PC Web page: www.microsoft.com/windowsce/ppc/about/default.htm

1. Calendar – an electronic appointment book that maintains your schedule, displays it in Day, Week, Month, Year, and Agenda views, and automatically reminds you of upcoming appointments.

2. Contacts – the Windows CE phonebook. You can quickly find, add, and edit personal and business contact information.

3. Tasks – the onboard to-do list that lets you track tasks. You can categorize and prioritize projects and to-do lists, and set Tasks to automatically remind you of critical tasks.

4. Inbox – an electronic mailbox. Inbox lets you send and receive electronic mail messages and attachments. You can download your email from your desktop PC or connect your Palm-size PC via modem to an Internet Service Provider and download email directly.

5. Voice Recorder – records and plays back short memos. Voice Recorder makes use of the Palm-size PC's built-in microphone and speaker to record and play back voice notes in WAV file format.

6. Note Taker – a palm-sized memo pad. Enter your notes in handwriting recognition mode, or with the built-in "Soft Keyboard." A built-in word completion feature helps you finish words quickly (available throughout the built-in applications). Note Taker also saves drawings, sketches, or handwritten notes.

7. Mobile Channels – a built-in Web content viewer. Mobile Channels lets you download and view content you've selected from the World Wide Web. You subscribe to receive information on your desktop PC and synchronize it to your Palm-size PC.

8. Remote Networking – a communications utility that supports serial, infrared, and modem connections.

9. World Clock – the built-in clock that tracks two time zones simultaneously. It includes an extensive database of cities worldwide.

10. Calculator – a basic calculator with large, easy-to-touch buttons.

11. Solitaire — the Windows CE version of the classic card game.

12. Settings – a group of set-up utilities for the Palm-size PC. Similar to the Windows Control Panel, it lets you set passwords, change owner information, configure communications connections, access the World Clock, and more.

13. Windows CE Services lets you automatically and effortlessly share information between your desktop or laptop computer and your Palm-size PC. A desktop PC version comes on CD ROM with every Palm-size PC. When installed on your desktop or laptop computer, Microsoft's ActiveSync™ technology automatically and continuously updates your Contacts, Calendar, Tasks, Inbox, Voice Recorder, Note Taker, and Mobile Channel data to and from your Palm-size PC—without pressing any buttons.

characters are as expected, but a few gave me trouble. Jot's Help screen showed me how to write them. Once you get the letters and numbers down, there's a whole raft of symbols you almost never use. Since Microsoft chose Jot for the Palm-size PC, they were wise to put in a good help feature.

Use Note Taker for quick handwritten memos: I'm getting the hang of Note Taker and liking it a lot more. I find myself skipping character recognition more and just

writing short handwritten "ink" notes like "pick up cat food" or "change dental appointment." It's quick and handy to scribble in short notes.

I use Contacts and Calendar most. I end up using my Palm-size PC mostly to access phone numbers and as an appointment reminder. I don't mind entering appointments on my Palm-size PC. Usually, the information is brief — the Palm-size PC encourages you to be brief. Contacts are another matter.

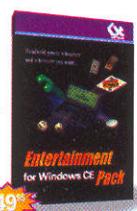
If I'm lucky enough to meet someone with another Palm-size PC or H/PC, I can "squirt" contact information back and forth via the infrared ports. Otherwise, I gather contact information the old fashioned way — I ask for their business card. I then enter the information into Outlook on my desktop and synchronize with my Palm-size PC. The fact that I can synchronize it with Contact on my desktop PC means that I don't have to enter data on the Palm-size PC, and you should avoid doing so if you can. (Windows CE Services and the docking cradle that comes with the E-10 make this a relatively simple process. However, I did find it a bit of a bother having to remove the rubber serial port cover on the E-10 each time I docked.)

Liven up your Palm-size PC with software from independent vendors. The Palm-size PC does what it's supposed to do in a simple and effective way. But it could do a whole lot more, and that's where independent vendors come in. More and more of them are coming out with software for the Palm-size PC. Casio includes some of it with the E-10, on a CD ROM (see sidebar, page 14). The point is that independent vendors are coming out with software that make the Palm-size PC a lot more interesting and sophisticated.

A piece of paper labeled "Important"

Casio thoughtfully includes a thin plastic "Touch Screen Sheet" to provide additional protection for the E-10's touch screen display. At first glance it looks like it will reduce visibility, but that is because of the sheet's green protective backing. Remove

Take a break, play a game!



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Bonus Software on CD ROM

The E-10 comes with two CD ROMs. One has Microsoft's Windows CE Services. The other is packed with applications from a number of independent software vendors and from Casio. These include: bFAX Express, Financial Calculator, Meeting Minder, Pocket Streets!, Quicken ExpensAble, Tetris, smART Commander; and Casio's Camera Viewer and Find File utilities. Below are some quick comments on the programs. Detailed reviews will have to wait.

• **bFAX Express** (BSQUARE DEVELOPMENT; Fax: 888-266-2329; Web: www.bsquare.com). bFAX Express adds fax capability to the E-10 or any Palm-size PC. bFAX gives you the option of sending a standard cover page. You can compose a message on the cover page and send simple, one-page faxes, or add attachment documents composed in another application. Faxes can be sent from any Palm-size PC equipped with a CompactFlash card modem (see Screen 1).

• **Camera Viewer** (Casio; Web: www.casiohpc.com/) Camera Viewer lets you view digital photos you take with a Casio digital camera. Transfer of these images from the camera to the E-10 should be easy because the E-10 and most of the Casio digital cameras have CompactFlash card slots. I had no images to test with this one.

• **Financial Consultant** (LandWare; Phone: 201-261-7944; Web: www.landware.com) An easy-to-use financial calculator that lets you solve problems relating to Time and Money, Amortization, Effective and Nominal interest rates, Flexible compounding, Date calculations, Investment analysis, Retail-style percentage calculations, and more. The use of popup menus provides single tap access to over 90 functions while still maintaining an uncluttered interface.

• **Find File** (Casio; Web: www.casiohpc.com/) The Find feature built into the Palm-size PC lets you search for a name, phone number, or phrase in your data. Find File adds the ability to look for data files by name, or display a "file tree." Tap on the small plus sign to the left of any folder in the tree to display its contents. Tap again (this time on the small minus sign) to close the folder. This utility is good for those of us who still relate to these devices in terms of file names and folders. (Tip 1: If you have the tree view open to a particular file and then go to another application and delete it, the file will remain in the tree view until you close and open the folder. Tip 2: Tap on any file in the tree view to open it. If it's a document, it will open in the correct application. If it's a program or utility, it will start.) (see Screen 2)

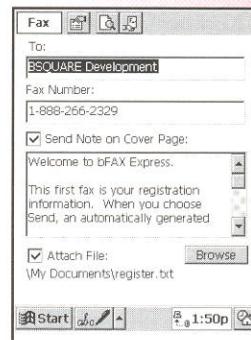
• **Meeting Minder** (Casio; Web: www.casiohpc.com/) According to the self-description, this one "provides fast and easy outline organizing capabilities and an intuitive, drag-and-drop outline processor." Unfortunately, I couldn't figure out how to use it. The Help screen described all the features thoroughly. They need to add a step-by-step example of a typical use (like they did with the Find File program).

• **Quicken ExpensAble** (On The Go Software; Phone: 800-331-3416; Web: www.onthegosoftware.com). Well designed for the Palm-size PC, Quicken ExpensAble lets mobile professionals track business-related expenses. It uses an "envelope" metaphor to track each trip (or event) you attend. It's easy to use and has pull-down menus where necessary to speed up data entry (see Screen 3).

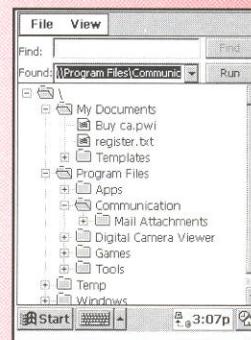
• **smART Commander** (ART Phone: 818-678-3999; Web: www.artcomp.com) Adds voice command capability to your E-10, letting you program an application or specific document to open when you speak the word of your choice. Tap on the smART Commander icon in the task tray, speak the word and you're in business. I don't like having to take out my stylus, tap the icon, and then speak out the command. Fortunately, you can reprogram the buttons on the E-10 (tap on Start, Settings, Buttons, Program). I'd assign smART Commander to the Side Button. This one activates Voice Recorder, but I don't use that much. Then all I have to do is slip the E-10 out of my pocket, press the button and speak out!

• **Tetris** (MobileSoft, Web: www.mobilesoft.com). In years past I've "invested" a lot of time in Tetris (or one of its many clones). The version that comes with the E-10 is a licensed version of the original, from MobileSoft. It's free, but the installation procedure requires that you fill out a registration form and have your desktop PC linked to the Internet while you install. A little confusing, but it worked (see Screen 4).

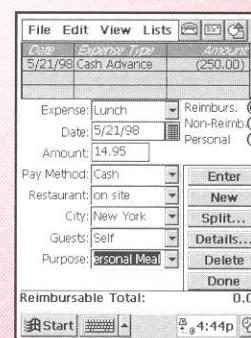
You can tap the screen to move or rotate the falling blocks. You can also use the rocker arm on the left side of the E-10 to move and rotate blocks, for one-handed play. Who needs a GameBoy when you've got a Palm-size PC?



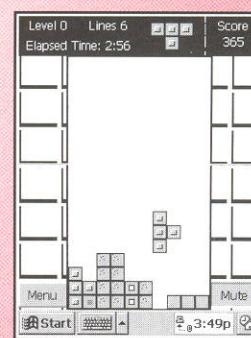
Screen 1: bFAX Express lets you send faxes from a Cassiopeia E-10, using an optional modem card.



Screen 2: Find File utility lets you look for files by name or display the files on your E-10 in a file tree structure.



Screen 3: Quicken ExpensAble lets you track expenses, write expense reports, and keep an eye on reimbursement checks.



Screen 4: Casio teams up with MobileSoft to add the popular Tetris game to your E-10, free of charge.

the backing and slide the clear portion of the sheet into place in front of the E-10's display. It does not reduce the visibility of the touch screen display at all, and protects it from scratches. You may need the Touch Screen sheet if you keep your E-10 unprotected, in a bag or brief case containing a bunch of metal objects. Then again, the E-10 comes with a small protective slip-case. You might just keep the E-10 in that and forget the Touch Screen sheet.

The piece of paper labeled "Important" also warned that playing back voice recordings and using the backlighting increased the drain on the batteries by 10-15 times. This warning probably applies to any Palm-size PC, no matter who manufacturers it. I don't know what you could do differently with backlighting. You use it when you need it, and you probably don't need it that often. It automatically turns off after 15 seconds by default. You can increase that time in the Display option of the Settings menu, but 15 seconds is the lowest setting.

If you can, avoid using the voice record playback until you are back in the office or at home and have connected the E-10 to its optional AC adapter. A good bit of general advice to extend battery life is to have adapters available at the places you sit down at for any length of time. Connect to the adapter whenever convenient.

Reviews are subjective

Certain things catch your eye that another reviewer might totally ignore. The E-10's box was pretty, and I was dying to get at the first model Palm-size PC to ship, but what caught my attention first was the Tech Support phone number (888-204-7765) on the side of the box. Casio didn't hide it in a manual. They put it right there, on the outside of the box, in big type, where anyone can see it. It's almost as if they wanted you to be able to find it and call them. What's more, there are clear technical support references for all of the bonus software found in the packaging and on the CD-ROM itself.

I'm one of those people who has spent some time digging through documentation looking for technical support phone numbers. Casio deserves a big pat on the back for putting support first, and technical support numbers where you can find them.

They also deserve congratulations for being the first Palm-size PC manufacturer out of the blocks, with a fine product. ■

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Financial Consultant 2.0

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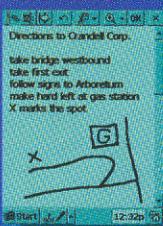
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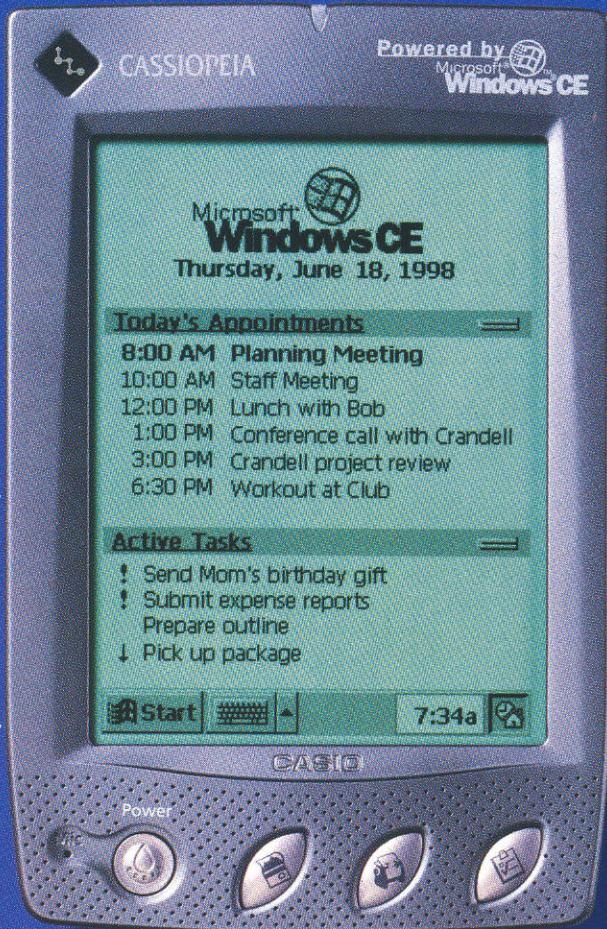
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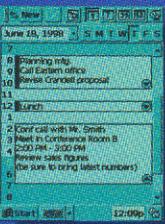


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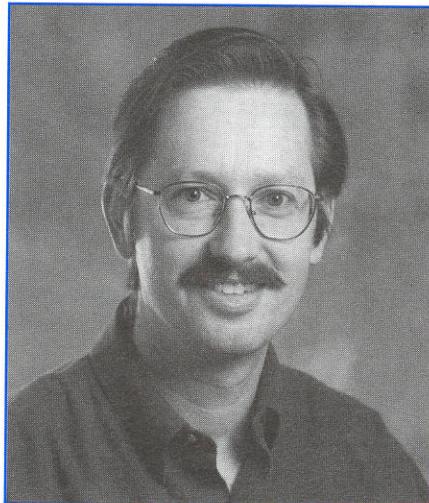


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Microsoft's Douglas Dedo

Group Product Manager, Windows CE marketing

Where does Windows CE Fit into the Enterprise?



Douglas Dedo is the group product manager responsible for Microsoft's international and strategic marketing efforts for Windows CE-based products. Prior to this, Doug was responsible for Microsoft's enterprise and intranet development strategies. Before joining Microsoft, Doug held product marketing, marketing communications, and software developer positions within Hewlett-Packard's networking group for 10 years. Prior to joining HP in 1984, he was a developer on networking and database projects in the United States and Europe.

Q. The term "Enterprise Computing" is used a lot these days. What is it and why is Windows CE important to it?

Enterprise computing refers to the technology that goes into supporting the needs of employees, partners, and customers of large organizations. This includes systems that manage electronic data, computers that automate business processes, and the networking infrastructure that ties it all together. At Microsoft, we call this the "digital nervous system."

Obstacles to effective enterprise computing include keeping key information on paper, maintaining business systems where the same data needs to be entered more than once, and lacking connectivity between key

business processes and data. One of the design goals for Windows CE was to provide rich connectivity so devices could easily communicate with each other, with desktop PCs, servers, and over the Internet. Devices powered by Windows CE can help people be more organized, make it easier to get data into the enterprise, and track the progress of an entire business process.

Q. Bill Gates has been talking about "information at your fingertips" for some time now. Why is that important to an enterprise?

Information is the lifeblood of an enterprise. Without easy access to the right information at the right time, an organization slowly dies.

Q We saw the first H/PCs well over a year ago. Now we're seeing Palm-size PCs and Auto PCs. Why is this expansion important to Enterprise Computing?

No one device satisfies the diverse set of needs of people working with large organizations. Handheld PCs, Palm-size PCs, and Auto PCs have been designed to address different computing needs of mobile professionals. Handheld PCs, the smallest devices to sport a keyboard, can be useful for handling email, documents, and vertical business applications (e.g. the application making HMR's pharmaceutical sales reps more efficient—(www.microsoft.com/windowsce/hpc/solutions/cs_hmr.htm)). Palm-size PC's smaller size make it easy for someone to have their key information with them at all times while still having an easy way to input new data. Auto PCs provide a hands-free way to get directions, make calls, and be entertained while on the road. Auto PCs are also a business application platform within a vehicle.

Q Windows CE now supports the development of "embedded systems." Why is this important to Enterprise Computing?

Sometimes it isn't feasible to create business solutions using off-the-shelf devices like the Palm-size PC or Handheld PC. The alternative is to develop a custom "embedded system" for a particular vertical business application. A point-of-purchase terminal or industrial controller are examples of this.

While the first Windows development efforts were aimed at personal computing, Windows CE was designed from the ground up to give an enterprise the flexibility needed to build the right device for the job. All the

tors to build custom devices that can tie into the existing corporate information system.

Q Should an enterprise develop its own Windows CE devices or use off-the-shelf units?

Business objectives, time to market, and cost typically dictate the scope of business projects. The path of least resistance often involves combining off-the-shelf PC Companion devices, add-on hardware peripherals (like bar code readers, digital cameras, or Ethernet cards), and a broad selection of off-the-shelf business applications (www.microsoft.com/windowsce/hpc/partners/thirdparty.htm).

If the right off-the-shelf application isn't available, the next step is to create a custom software application. If this approach still doesn't satisfy the business requirements, then building a customized device powered by Windows CE becomes an option. More than 30 systems integrators are listed on our web site, available to help build these custom embedded systems using Windows CE.

Q What kind of company will benefit most from Windows CE devices?

Any company with employees that need to leave their office to get their job done. The most significant work scenarios are where there is a need to disseminate information quickly to a large number of mobile professionals and where employees are more effective when they can be closer to the customer without sacrificing access to key corporate services. The return on invest-

developer has to do is select the subset of features from the Windows CE operating system and complete the device with those user interface elements, applications, and other services needed by the specific type of business user. Embedded systems can be built, simulated, and debugged using a standard Windows NT-based desktop computer. This approach provides a cost-effective, flexible way for IT organizations or systems integrators to build custom mobile devices.

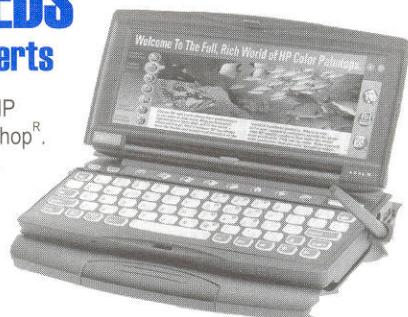
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ment or savings can be significant like the \$5 million projected savings from making the HMR sales reps more efficient.

Q. Who in the enterprise will benefit most from Windows CE devices?

There are different types of mobile workers from "corridor cruisers" to "globe trotters" that spend 40% or more of their time away from their office. PC Companion devices enable these mobile professionals to take their most valuable information with them at all times. This helps them improve their productivity, provide better customer service, or speed the process of injecting key information into the business. Mobile professionals can be sales representatives, business executives, even factory floor workers.

Q. What are some of the challenges faced by those integrating Windows CE devices into the enterprise?

The biggest issues facing those deploying Windows CE-based devices in an enterprise include understanding exactly how the new devices will be used, how to design an application for easy deployment and updates, how to integrate existing IT systems with PC Companion devices, how to support these mobile users, and how to track the devices on an ongoing basis. Microsoft and our partners are providing information and technology to address these issues today.

Q. Why should an enterprise use Windows CE devices? Why not use devices using other operating systems?

Devices built with proprietary operating systems and tools are costly to build and maintain.

In contrast, Windows CE-based devices are easy to use so that costly training programs aren't required. The off-the-shelf options for Windows CE-based devices, peripherals, and applications provide a huge amount of choice today. The PC Companion devices have some of the most commonly used enterprise protocols built in so it is easy to connect to Windows desktop information, POP 3/SMTP e-mail servers, TCP/IP and HTML-based Web servers, and ODBC data stored on business servers like Windows NT. And using devices running the Windows CE operating system brings all the efficiencies of the Windows software development community to the table. Over 5 million developers are already familiar with the Win32 application programming

interface and the inexpensive Visual Tools used for creating or porting applications for these mobile devices. All of these factors help to drive down the costs surrounding devices powered by Windows CE.

Q. How important is Windows CE to Microsoft? What internal resources have you committed to supporting developers of enterprise-wide solutions?

Microsoft has been investing in Windows CE since 1993 and today has over 700 people dedicated to this one area. Over a half million of the first wave of Handheld PCs built using Windows CE have already shipped. Now Palm-size PCs and second generation H/PCs are shipping in volume. Similar to the investment in Windows NT for enterprise servers, Microsoft sees great business opportunities from this new Windows CE platform to address business needs of the enterprise. Even within Microsoft, we are using PC Companion devices to improve business efficiencies like tracking retail inventories and enhancing our sales force automation.

Q. Where can an individual or company get help with the implementation of Windows CE into their enterprise?

Our Web site, www.microsoft.com/windowsce/itsolutions2/, provides information as well as pointers to a large list of companies delivering hardware, software, and ser-

vices related to Windows CE. Training and assistance can also be found at events like the Windows CE Developer Conference and within the Microsoft consulting organization, MCS.

Q. I know you can't comment on specific Microsoft plans, but what does the future hold for Windows CE and how will that future benefit the enterprise?

The future is very bright for Windows CE. Every time a new class of device is created, the Windows CE core OS is enhanced. And every time the core OS is enhanced, new versions of Windows CE-based devices benefit. This iterative improvement process has already demonstrated results. The enterprise will benefit from ongoing Windows CE innovation in system drivers, network connectivity, extending support for desktop technology like DCOM and COM+, data access using the ActiveX Data Objects API to synchronize with enterprise data, security options, expanded real-time performance, asset management options, further international localization, and rapid application development environments.

These innovations will make it even easier for developers to build solutions that tie Windows CE applications for mobile professionals with enterprise systems. Stay tuned! ■

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SEMPER MOBILIS!

Getting on Top of the Muddy Hill with Windows CE

By Major James Cummiskey



It was good to be back in uniform! In September 1998 I graduated from the Naval Postgraduate School with an MS in Computer Science. My research and thesis focused on incorporating commercial palmtop-sized computers and Windows CE into the Marine Corps' existing command structure. Now it was time to do some real life "incorporating."

I was assigned as the Win32 System Architect and a Technical Advisor to the Commanding Officer of the Marine Corps Tactical System Support Activity (MCTSSA) in Camp Pendleton, California (www.mctssa.usmc.mil/hq/tech-adv1/index.htm). The mission of MCTSSA is simple: build and integrate tactical command and control systems to keep Marines alive in battle. At MCTSSA, I have had a unique opportunity to continue my mobile computing evangelism throughout the Marine Corps. Of particular note was the experience I had last summer while assigned as the MCTSSA Officer-in-Charge of a strategically significant amphibious training exercise in Southern California.

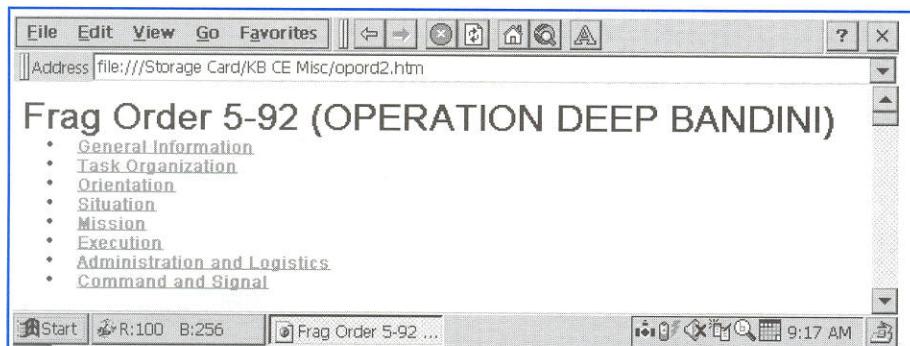
KERNEL BLITZ Tests Windows CE battlefield solutions

The largest amphibious exercise in North America, KERNEL BLITZ 97 was conducted off the shores of Camp Pendleton by the 1st Marine Expeditionary Force (I MEF) in June 1997. The exercise provided a unique opportunity for my command to support the Marine operating forces in a real-world exercise while exploring Windows CE solutions to many of the challenges associated with landing 26,000 men on a beach against an opposing force.

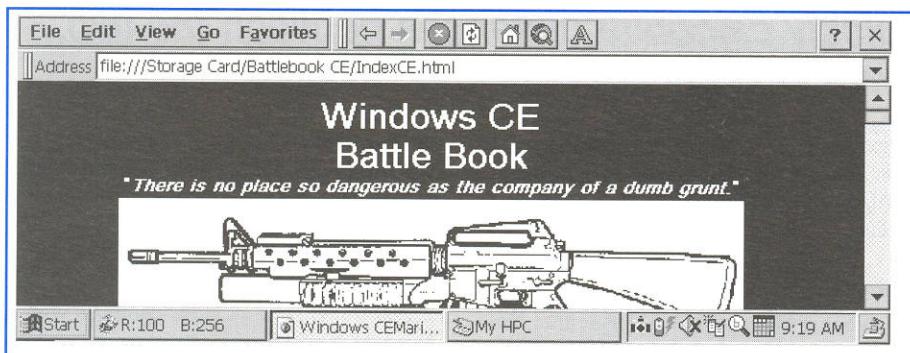
During KERNEL BLITZ, one of my priorities was to provide Handheld PCs for the small unit leaders (including platoon commanders and scout/sniper platoon members) for use during the operation. Since CE 2.0 was not yet shipping, we used both the Casio A-11 and the Hewlett-Packard 320LX; both Windows CE 1.0-based H/PCs readily available at the time. These inexpensive devices were used for many things, but one of the most significant uses was for communicating operation orders during tactical huddles in the field.

What's an Operation Order?

Much like a football quarterback, Marine leaders are constantly calling their subordinate leaders up for a quick huddle to discuss the plan for the next operation. The timely distribution of these "operation orders" is



Screen 1: An H/PC screen shot of a typical battalion operation order that I wrote as an infantry battalion operations officer. It's written in HTML format with an overview on the first page and links to each section.



Screen 2: The opening screen of the USMC Battle Book as it appears on the H/PC. Critical battlefield data is kept on the H/PC in HTML documents and quickly searched with the built-in Pocket Internet Explorer.

paramount, as they help us synchronize our actions and support each other in battle. Unfortunately, our "state-of-the-art" reproduction capability in the field is still carbon paper. These tactical huddles often turn out to be a fatiguing exercise in note taking. The company commander does all the talking while his platoon leaders desperately try to write down every word coming out of his mouth. And, of course, these tactical huddles usually happen at night, so everyone is dog-tired from the day's operations. Naturally, Murphy's Law ensures that it's both raining and the wind is blowing fiercely whenever possible.

It should surprise no one that errors often creep in during this tedious order-issuing process. After all, stenography is not a Marine's most prized battlefield skill. However, if a Marine leader writes down the wrong information, people can pay with their lives. (E.G., "The F-18 aircraft will be dropping their bombs at 0900 in vicinity of Checkpoint 8—or is that at 0800 in the vicinity of Checkpoint 9?")

H/PCs in the hands of Marine leaders change this scenario. Operation orders can now be transmitted flawlessly in a few seconds via the H/PC's infrared communication capability (see screen 1). Instead of

being an exercise in note taking, subordinates download exact copies of the orders. Each recipient can then put all of his attention on listening to his commander as he goes over the plan. This significantly increases comprehension and decreases the likelihood of misinterpretation. For Marines, this is one of our "killer applications" for the H/PC.

The Windows CE "Battle Book"

Marines today need to be able to quickly access an ever-increasing repository of critical battlefield data, fondly referred to as the "Battle Book." For example, we use our Battle Book to keep up to speed on such things as enemy weapon system ranges, checklists for conducting field operations, and formats for the seemingly endless collection of reports we use in combat and training.

Unfortunately, in most of the Marine Corps, the Battle Book is a collection of paper and laminated cardboard organized in a binder. The typical Marine infantry small-unit leader carries an extra four pounds of paper with him into combat, and only so much information fits on four pounds of paper. There had to be a better way!

During KERNEL BLITZ we experi-

mented with using the H/PC as the Battle Book. We used 20 to 32 MB Flash RAM storage cards to store the Battle Book in HTML format. A unit leader could quickly search a couple dozen footlockers worth of information using Pocket Internet Explorer (see Screen 2).

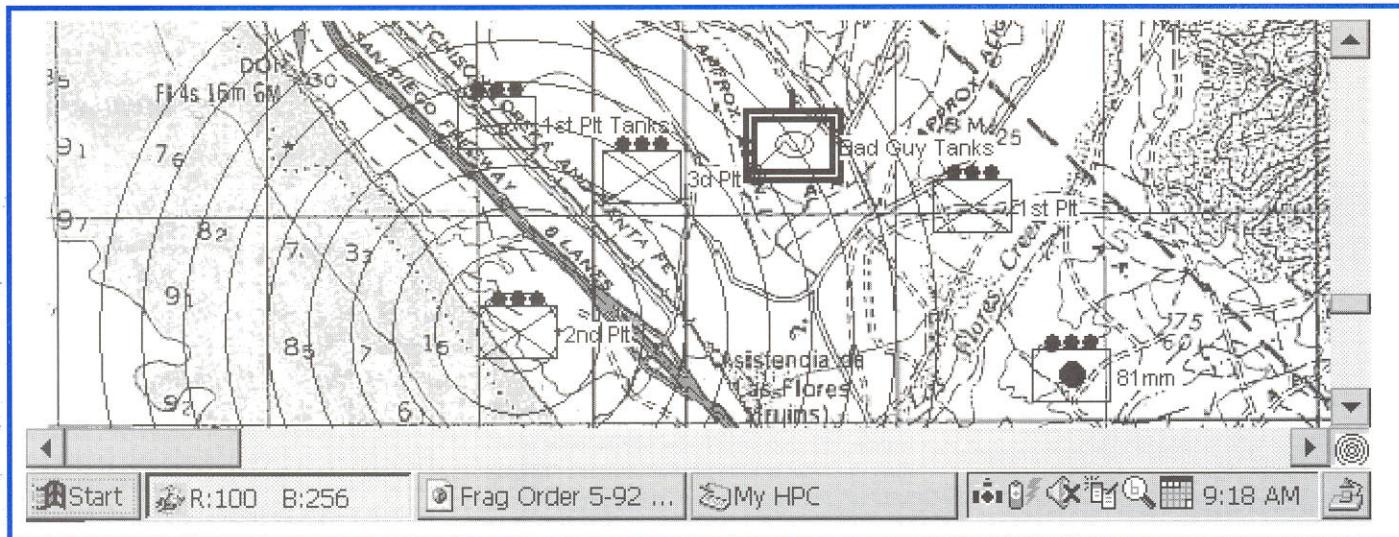
We chose to format our H/PC documents in HTML for a couple of reasons. First, it lets us view and edit our documents in the intuitive language of the World Wide Web. It's easy to organize a lot of information in an HTML document, and maneuver quickly through the document by clicking on links. Marines like to maneuver quickly! Second, Pocket Internet Explorer is already built into the H/PC. It's there in ROM and it's going to stay there, uncorrupted, and ready when you need it.

Developing "situational awareness" with the H/PC

As you probably are aware, there's more to being a Marine than reference documents, however efficiently they're transmitted and organized. We didn't stop with Operation Orders and Battle Books. We developed "Chesty Junior" with the help of Norman Hills, a talented software developer at the Casio Corporation.

Chesty Junior is a prototype "situational awareness" application for the H/PC. We named it after Lieutenant General Lewis "Chesty" Puller, one of the Marine Corps most revered combat generals and a great proponent of the importance of getting the straight scoop in battle. Marines define situational awareness as knowing where you are; where your buddies are; and where the bad guys are. Traditionally, this kind of information is displayed in the form of a map with markers on it. This information is vital, especially for the small unit leader. However, since the small unit leader is a guy who crawls around in the mud, it's never been really practical for him to carry this type of information with him. Not practical, that is, until the H/PC came on the scene.

The portability of the H/PC and the communications capabilities of Windows CE combine to provide an ideal mobile platform for tracking and displaying this type of information. Chesty Junior gives the Marine in the field the ability to display a high-quality 1:50K scale map of the battlefield (1 inch on the display equals 50,000 inches), as well as the ability to plot both enemy and friendly units (see Screen 3). As position updates become available, users can easily move position markers around and quickly calculate range and bear-



Chesty Junior's map display, which lets the Marine see the location of friends and foes, and quickly calculate distances between the two.

Screen 3: The prototype "Chesty Junior" application adds "situational awareness" capabilities to the H/PC.

ing from any particular unit to another.

As wireless and Global Positioning System (GPS) capabilities are incorporated, it becomes possible to share this carefully developed situational awareness data with other Marines. Each small unit leader can receive position updates, calculate targeting data, and request tactical support from other units, all using the H/PC and Chesty Junior.

Due to power and weight considerations, Marines in small units cannot afford to lug sub-notebooks around for messaging and situational awareness. A lightweight, semi-rugged H/PC, with a high degree of interoperability with Win32 notebook and desktop systems, provides the perfect compromise between power and size. Chesty Junior and the inexpensive yet reliable H/PCs suggest a future direction for handheld situational awareness platforms.

(Note: Chesty Junior began years ago as a Lotus Spreadsheet I wrote for the HP 95LX. I rewrote it in the C programming

language for the more-capable HP 200LX. This DOS program, named GridCalc, is available at <http://dubhe.cc.nps.navy.mil/~jccummis/thesis/html/AppendixD.htm>.

But will it survive?

When a Marine looks at a new tool, the first question that pops out of his mouth is, "how long will it survive in battle?" Up to this point in the article, everything sounds nice. But if nothing happens when you press the "ON" button, what good is it?

Traditionally, the military pays big bucks to create "ruggedized" and "militarized" solutions. But did we really need to pay for military-specific handhelds when an inexpensive commercial H/PC, with a little help from an outside vendor, meets most of our needs?

To give the H/PC a fighting chance on the battlefield we worked with a New Zealand company called Kiwigreen (www.mobilepda.co.nz) to create a ruggedized

case they call the "Nighthawk" (see Screen 4). Nighthawk is a padded, water-resistant camouflage leather case that makes the H/PC much more survivable in adverse conditions. Furthermore, Nighthawk has a rechargeable NiMH battery built in. This extends the life of an H/PC equipped with a PC-card modem up to 20 times its normal operational life. When there are no power sources handy to recharge the NiMH battery, you can run the H/PC off of Nighthawk's disposable lithium cells, which can provide a lightweight source of backup power for weeks. The case has a thermal blanket to keep the H/PC cool in the summer and warm in the winter. Nighthawk comes with a snap-in LED light to illuminate the keyboard at night (with a rheostat to adjust the light). A Velcro mounting system lets you strap the H/PC securely in the case and Nighthawk's extra padding make the H/PC extremely shock resistant. All this contributes to making the H/PC very survivable in combat.

Wireless Connectivity is Key

Although quite useful as stand-alone solutions, H/PCs truly shine, and contribute to the success of a military operation, when networked into a communications architecture. These "comm-pipes" not only enable the messaging and web-browsing applications mentioned earlier, they facilitate the passing around of the situational awareness and fire-support messages (depicted in the sidebar CE in Combat). Of course, any communication channel we select has to be wireless in nature. You don't go into battle with a cable hanging out of your rear end.

At MCTSSA, we are currently experimenting with a variety of communication



ABOUT THE AUTHOR

Jim has been integrating handheld technology into the battlefield for five years, beginning with his efforts to use the HP 95LX palmtop PC as commanding officer of a Marine infantry company in Kuwait (see the Sep/Oct 93 issue of *The HP Palmtop Paper*). The Marine Corps sent him to the Naval Postgraduate School in Monterey, California where he graduated with an MS in Computer Science. His thesis discusses the incorporation of commercial palmtop-sized computers and Windows CE into the Marine Corps' existing command and control architecture. A web site detailing Jim's mobile computing research is available at <http://vislab-www.nps.navy.mil/~jccummis/>. This web site includes a link to his published thesis.

During his tenure at graduate school, Jim was invited by Microsoft to become one of the original Independent Software Vendor (ISV) developers for the emerging Pegasus program—later to be renamed Windows CE. Chapter 7 of his thesis (available at dubhe.cc.nps.navy.mil/~jccummis/thesis/html/Chapter7.htm) details his early exploration of Windows CE and evaluation of its suitability for use on the battlefield.

Jim has briefed government and civilian audiences about the Marine Corps' experimentation with mobile computers and Windows CE on the battlefield. He also participated as a panelist at the March 1998 Mobile Computing Insights conference and the April 1998 Windows CE Developer's Conference.



Photo by Jim Gasper

Screen 4: We worked with Kiwigreen to develop Nighthawk, a padded, water-resistant camouflage leather case that makes the H/PC much more survivable in adverse conditions, and provides extra battery life.

solutions including 2.4GHz Wireless LANs by Proxim and Symbol, two-way paging networks offered by SkyTel, and Packet Radio networks such as Ardis and RAM Mobile. We are also looking closely at the wide variety of analog and digital cellular phone systems in conjunction with PC-card and software-based modems. The basic idea is to use commercial infrastructure when it is available, but also plan on bringing our own mobile infrastructure to the field to augment commercial networks that are sometimes unavailable in combat. We are also looking forward to the emergence of the numerous Low Earth Orbit Satellite (LEOS) constellations that are being built (such as Orbcomm, Iridium and Teledesic). The promise of bandwidth up to 64mbps downlink and 2mbps uplink from a LEOS SATCOMM transceiver is very exciting for both military and commercial telecommunication applications.

Future Work with the H/PC

Work continues at MCTSSA as we attempt to fully harness the power of the H/PC and Windows CE on the battlefield. One of the more critical problems confronting the military is our requirement to share data across the battlefield network to make sure everyone is "on the same sheet of music." After all, if I'm going to drop a bomb on Checkpoint 8, I'm pretty sure the guys in the vicinity will want to know when I'm going to do it and want my positioning data to be as accurate as possible!

One of the more critical problems con-

fronting the military is that of data reconciliation. We are the true "mobile professional" and the command structure has to be able to send us necessary information and keep us all in sync. System engineers call this the "requirement to replicate and reconcile a database across widely distributed mobile clients." We are looking into adapting existing commercial technologies to the needs of the ever-mobile Marine.

Work is also underway to enhance Chesty Junior, integrating Global Positioning System (GPS) support, connectivity to a central database via wireless communications, and increasing the functionality of the application. Throughout all of these initiatives, I have continued to receive outstanding support from numerous H/PC and Windows CE software vendors. Most notably has been the great support from Hewlett-Packard, Casio and, of course, the Microsoft Corporation. We are also working closely with my alma

mater, the Naval Postgraduate School, to further the potential of mobile computing for military applications.

Windows CE and the current family of Windows CE-based devices seem well suited to the mobile computing needs of the armed forces. The familiarity of the standard Windows interface and compatibility with desktop applications, the instant-on functionality, and the long battery life of low-cost RISC devices are all key ingredients in the success of the H/PC. Moreover, the ability to leverage the Marine Corps' investment in Win32 code already developed for the Win 9x and NT operating systems is a critical component of Windows CE. Finally, Windows CE offers us an opportunity to exploit the training investment of our engineers in both the Win32 Application Programming Interface (API) and the Visual Studio Integrated Development Environment (IDE). Microsoft's rich set of development tools for the CE-based H/PC distinguishes it from the pack of other mobile operating systems. Windows CE is the mobile operating system of choice for the U.S. Marine Corps.

Thus, mobile computing is essentially about freedom: the freedom to retain one's connectivity to rest of the world and the critical bits of personal data that are becoming increasingly important to our daily lives. The Marine Corps, in particular, has more of these critical bits of data to worry about than most. As Marines struggle to get on top of the muddy hills of tomorrow, a handheld personal computer is almost certain to be a critical part of their battle gear. Semper Mobilis! ■

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NEWS Bytes

O.K., Everybody: It's "Palm-size PC"!

Microsoft Corp., 3Com Corp. and Palm Computing Inc. announced that they have agreed to amicably settle their dispute over the naming of the category of palm-size devices originally referred to by Microsoft as "Palm PCs." As part of the agreement, Microsoft will discontinue use of the term Palm PC and will begin referring to this category of devices as Palm-size PCs.

Under terms of the agreement, Microsoft will initiate a worldwide transition to the new term. In the coming months, Microsoft will ship to its original equipment manufacturers a worldwide English-language release of Windows CE 2.0 that substitutes the new category name. In addition, existing inventories of initial devices using the current term may be sold until software and devices using the new descriptor are available later this year. This agreement resolves the pending legal dispute.

For further information, contact Microsoft's web site at www.microsoft.com or 3Com's web site at www.3com.com/

Windows CE Services version 2.1 Upgrade

Microsoft has announced the release of Windows CE Services 2.1. This upgrade adds several new features for Handheld PCs and Palm-size PCs powered by Windows CE 2.0.

- File conversion and other synchronization settings are tailored to the Palm-size PC, letting you configure your PC to sync with a Palm-size PC, a Handheld PC, or as many of both as you like!
- New Microsoft ActiveSync™ support for Mobile Channels lets you update your Palm-size PC with your favorite Web channels every time you connect to your PC!
- File synchronization for Palm-size PC lets you sync your Rich Ink Notes with Microsoft Word!
- ActiveSync is now compatible with Microsoft Outlook 98 messaging and collaboration client beta version 2.2 and beta versions of Microsoft Windows 98 operating (Beta 3) and Microsoft Windows NT operating system 5.0 (Beta 1). Get your Handheld PC or Palm-size PC ready for the latest releases of Microsoft Outlook and Windows!
- Improved Partnership Wizard helps you set up your Handheld PC or Palm-size PC fast!
- Improved handling of Internet AutoConnect configuration during Windows CE Services setup.
- Improved handling of previous modem configurations on Microsoft Windows NT-based systems.
- Application Manager now enables easier installation of applications to a PC card on your Handheld PC or Palm-size PC!
- Improved ActiveSync support for Daylight Savings Time for Southern Hemisphere countries when using Outlook 97 version 8.03 or later. Early versions of the Handheld PC may require a device update to complete this. Check with your device manufacturer for availability.

This upgrade is provided to upgrade Windows CE Services version 2.0 only. You must ensure that you have installed Windows CE Services version 2.0 before installing the upgrade. This upgrade does not support Windows CE operating system software version 1.x devices.

Find out more, including where to download the Windows CE Services upgrade. Link to the Microsoft Windows CE web-site: www.microsoft.com/windowsce/pccompanions/wceserv_upgrade.htm

Windows CE 2.0 Service Pack 1

The Windows CE 2.0 Service Pack 1 makes the following improvements:

- Enables file copy operations during power cycling. System lock-ups had been reported when a unit powered down to conserve energy, or while copying large files or sets of files to Compact Flash, PCMCIA ATA Flash, or SRAM cards.
- Enables copying and pasting one folder into another where the folder's name differs by ONLY the last character (for example: pasting a folder named "Doc" into a folder named "Doc1"). Doing this has caused the device to crash.
- Permits your H/PC to connect to more online service providers by enhancing CHAP authentication to support up to 256-character responses.
- Allows long-term use with network connections. Continuous network use degrades performance over time. The service pack addresses known issues associated with this problem.
- Enables you to individually set any event sound to the .WAV file of your choice without disrupting any other settings.
- Displays the correct time in Calendar appointments regardless of location or daylight savings time status in all regions of the world.

At the time this announcement was written, Casio, Hewlett-Packard and Sharp had the download available on each of their Web sites. Other H/PC manufacturers may have followed suit by now. Each emphasized that the download they offered only worked with their H/PC. Note that this service pack is a fix to Windows CE 2.0 — it is not the Windows CE 2.1 Upgrade announced earlier.

Cassiopeia download site: www.casiohpc.com/sp1_readme.html

HP Palmtop PC download site: www.hp.com/cposupport/indexes1/pt620lx.html

Sharp Mobilon download site: www.sharpusa.com/main.asp?sect=3&pageid=AEDEA. (Sharp's URL address is not very intuitive. Make sure you get all those funny characters correct. If you have problems, go to www.sharp-usa.com, do a search on "Mobilon" and select "Mobilon Download Software — Mobilon" from the list the search generates.)

Tiny Optical Drive for Handheld Computer Market

According to an article in the Business Journal San Jose, Microsoft Corp. recently joined with Polaris Venture, Partners of Bellevue, Britannia Ltd. of Great Britain and others to invest \$9.5 million into a 35-employee company called loptics. According to loptics sources, the company will use the money to make a production prototype of a tiny, lower-power optical drive for the handheld computer market.

The company expects that the tiny drive will cost approximately \$200 with 128 MB data cards at \$2 to \$3 each. Subsequent generations of the drive and data cards are expected to have the capacity of today's CD ROMs. No specific plans have been announced for other Windows CE devices.

For more information, contact: loptics (USA); Web: www.loptics.com

Microsoft Ships Japanese Version of Windows CE 2.0 to H/PC manufacturers

Microsoft is expanding its international support by releasing a Japanese version of the Windows CE 2.0 operating system for the H/PC. This is in addition to the English, French, German, Italian, Portuguese and Spanish language versions previously announced.

The new release includes the operating system, the handheld PC user interface and the suite of "Pocket" applications, including Pocket Outlook, Pocket Word, Pocket Excel, Pocket PowerPoint, and Pocket Internet Explorer. With this release, Original Equipment Manufacturers (OEMs) can develop and market Japanese versions of the Windows CE 2.0 handheld PCs.

According to Microsoft, the Japanese-language version of Windows CE 2.0 has been released to Casio Computer Ltd., Compaq Computer Corp., Hewlett-Packard Co., Hitachi Ltd. and NEC Corp. Each OEM will set its own development timetable and pricing.

PowerToys for Windows CE 2.0 H/PCs

Microsoft has released PowerToys 2.0, a set of unsupported utilities and add-ons for Handheld PCs powered by Windows CE 2.0. Among the new programs are:

Business Cards — a utility for easy infrared transmission of Contact information; Information Today — a tool for getting a handle on all of the day's appointments, tasks, alarms, mail, and more; Mailbox Grepper — a utility for finding email addresses in your Inbox and turning them into Contacts; and DTMF Dialing — a utility that makes phone tones from numbers in your Contacts.

Several of your favorites from the first PowerToys are included. Remote Control is not.

Download from: www.microsoft.com/windowsce/hpc/software/powerr.htm

Free Windows 98 Upgrade with H/PC or Palm-size PC Purchase

Good only for Windows CE 2.0 devices purchased between May 1st and June 30th. Purchase a Palm-size PC or Handheld PC and be eligible to receive a coupon worth approximately \$109 to get the Windows 98 upgrade, once it becomes available. Coupons are available through your local Microsoft reseller, or can be printed from the Microsoft Windows CE Web site below. Please follow the mailing and proof of purchase instructions.

Web: www.microsoft.com/windowsce/98upgrade/

RAM Mobile Data now "BellSouth Wireless Data"

BellSouth Corporation has assumed 100% operational control of RAM Mobile Data and has renamed the business "BellSouth Wireless Data." The network provides wireless services throughout the USA. For more information, contact: BellSouth Wireless Data; Phone: 800-726-3210; Email: webmaster@bellsouthwd.com; Web: www.bellsouthwd.com

Upgrade Corrects pcANYWHERE CE Display Problems

(From Don Hergert)

I had been using the original version of pcANYWHERE CE on the HP 320LX that I had upgraded to Windows CE 2.0. Then I got the new HP 360LX and tried using pcANYWHERE CE on it. On the 360LX it didn't display properly, and because of this, pcANYWHERE CE was useless for the 360LX and for every other Windows CE 2.0 H/PC with 16-grey-shade or color displays.

Fortunately, I discovered that Symantec was aware of the problem and offers an upgrade to fix it. The file name is CEUP1_2.EXE and it is available on the Symantec Web site at: www.symantec.com/techsupp/files/pca/pcanwhere_for_ce.html

NEWS Bytes

Oracle Lite for Windows CE enters beta testing

Oracle Corporation is now beta-testing the Windows CE version of its popular database program Oracle Lite for Windows CE in preparation for a late summer release. Oracle Lite is a small, single-user, database program of interest to H/PC users requiring seamless synchronization with central database servers as well as individual H/PC users needing a small, stand-alone database program.

Oracle Lite for Windows CE provides a robust set of database features with a footprint of only 250-750 Kb. While you can create stand-alone databases with Oracle Lite, it also supports a range of development languages and tools, such as Java, C/C++, Oracle? Tools, Visual Basic, PowerBuilder, and Delphi. Oracle Lite leverages the power of Oracle8 to provide Handheld PC users access to enterprise database applications that are completely synchronized with their corporate systems.

Contact: Oracle Corporation, Phone: 650-506-7000; Oracle Web: www.oracle.com/; Oracle Lite Web: www.oracle.com/clientdb/olite/.

TrueSync CE for the HP 360/620LX Palmtop PC

This utility for the Hewlett-Packard 360/620LX only lets HP palmtop PC users transfer Pocket Calendar, Contacts, Notes and Tasks items easily from their palmtop PC to the shirt-pocket-sized REX PC Companion card. REX is a Personal Information Manager on a PC Card. Its LCD screen displays appointments, contact information, a to-do list and notes. REX is a display-only device. You enter the information on another computer and download it to REX through a docking station or PC card slot.

Plug the REX card into the Type II PC-card slot on the HP 360LX or 620LX and tap the TrueSync CE icon on the HP palmtop PC. TrueSync downloads the Pocket Outlook data automatically.

TrueSync CE only works with Hewlett-Packard's 360LX and 620LX palmtop PCs. TrueSync CE software can be downloaded free of charge from the Hewlett-Packard Web site: www.hp.com/handheld/getting_help/promotions/rex/rex_intro.html.

TrueSync CE will ship with the HP 360LX and 620LX beginning in May.

Note: Puma Technology recently released a version of its popular Intellisync program that lets you synchronize your desktop PC with the REX. Users of other Windows CE devices could conceivably use this new version of Intellisync, and the previously released Intellisync for Windows CE to keep an H/PC and the REX device synchronized. Note also that Starfish just released its own desktop version, TrueSync Plus, to keep the REX and a desktop PC's PIMs synchronized.

For more information on Intellisync, contact Puma Technologies, Phone: 800-774-7862; Web: www.pumatech.com. For more information on REX contact Franklin Electronic Publishers, Phone: 888-REX-6400. For more information on TrueSync Plus contact Starfish, Phone: 888-STARFISH; Web: www.starfish.com.

PhatWare Corporation specializes in software for the Handheld PC. By listening carefully to customer feedback, we have created products that fulfill our users' important needs and desires. Visit PhatWare's web site and try our products for 15 days absolutely **FREE!**

<http://www.phatware.com>

- Organize your notes with HPC Notes.
- Check your documents with HPC Spell.
- Manage databases with HPC dbExplorer.
- Connect to networks with HPC NetProfile.

PhatWare Corporation

HPC Notes

HPC Spell

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HPC NetProfile

HPC Trace



650 299-0110

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Handheld PC Magazine's

TOP 10

Which items in the ever-expanding universe of Windows CE software and accessories should you buy?

Instead of turning over 300 products to our in-house testing laboratory (Technical Editor Tom Gibson), we decided to do something different. We decided to see what the actual, day-in, day-out users of handheld PCs like and recommend. These articles are (hopefully) the beginning of a series where handheld PC and Palm-size PC users tell us what they think is truly useful.

Below is the Top 10 list from regular contributor Todd Ogasawara. As this series continues in upcoming issues, we'll see how much users agree on the truly useful software and accessories for PC Companions. What are your top Windows CE products? Email me at rich@thaddeus.com and let me know.

— Rich Hall

Todd's Top 10 for Windows CE

By Todd Ogasawara

If you have used any kind of computer for a while, you've probably found a number of tools (hardware, software, or accessories) that you consider essential. It could be anything from a complex mathematical modeling program to a favorite brand of lint free cloth for cleaning your display screen. Whatever it is, you wouldn't be without it.

The following is my personal Top 10 list of tools for H/PCs. (I hope to have a separate Top 10 list for Palm-size PCs in the near future!) To make this list, the items had to generate a "gee whiz" reaction from me. In addition, it had to be something I found myself either using on a day-to-day basis or having value in unique situations (like the need for a good spare tire when you have a flat).

The list is highly personal and not meant to imply that you should run out to get each one of the items. However, I hope you might find something in the list that might help you in your day-to-day use of your H/PC.



ABOUT THE AUTHOR

Todd Ogasawara is the forum manager of the Microsoft Network, Computing Central, Windows CE Forum and Telephony Forum. He has been working with computers of all sizes and with all kinds of operating systems since the mid-1970s. He lives in Hawaii with his wife and daughter. The Windows CE forum is found at: computingcentral.msn.com-forums/windowsce/.

1 eWallet™

\$29.95

We live in a world of passwords, PINs, and credit card numbers — too much for the mortal mind to remember. That's why I have Ilium's eWallet on my H/PC. eWallet is a simple, password-protected card file that lets you keep important, hard-to-remember information secure on your H/PC. It uses a "card" metaphor to represent information, so the information about your Visa card is displayed on the H/PC's screen in the form of a Visa card. Ilium provides a number of pre-defined cards to help you easily organize your information. If none of these meet your specific need, you can use a free-form card to enter almost anything. One side of eWallet's screen displays the card. The other side displays a structured list of the cards you have entered. Tap on the item in that list

and its card is displayed. If you have a lot of small bits of information that you need to retrieve in a secure manner, you want to seriously consider eWallet.

Ilium Software
Phone: 888-532-5388
Web: www.liumsoft.com

2 ListPro™

\$24.95

ListPro does one thing and does it extremely well. It keeps lists! It lets you create almost any kind of list to organize all kinds of information. I use it to create shopping lists, categorize and annotate Web pages that I want to visit, and track stocks that I am interested in buying. You can use ListPro to keep lists of important procedures (say the list of actions you need to take before heading off on a business trip or vacation), repetitive instructions, construction items for a project, and much more. What's more, these lists are with you, on your H/PC, wherever you go. If you keep lists, or want to, you definitely need ListPro.

Ilium Software
Phone: 888-632-5388
Web: www.liumsoft.com

3

smARTcommand™

\$39.95

Anyone who has watched Star Trek has probably wanted to talk to a computer. It would be so simple if you could say, "Computer, print out this page," and forget about pressing keys and clicking on icons. This capability would be particularly useful in the world of H/PCs and Palm-size PCs, where keyboards are either small, or nonexistent. That's where smARTcommand comes in.

SmARTcommand, from Advanced Recognition Technologies, installs on an H/PC or Palm-size PC and lets you "teach" your PC Companion simple commands. You can associate a specific word or phrase with an application or document. Speak the word out and the application launches or the document opens in the correct application. The teaching process is fast and easy to perform. Within a few minutes of installing smARTcommand, I was using it to launch Pocket Word, Pocket Excel, eWallet, ListPro, and other of my frequently used Windows CE applications. To protect against accidentally starting programs, smARTcommand must be activated each time you give a command. Tap the smARTcommand icon in the status bar and then say the command phrase. What could be easier?

SmARTcommand is available separately.

ly (or as part of Voice Suite and includes smARTcontact).

Advanced Recognition Technologies
Phone: 818-678-3999
Web: www.artcomp.com/

4

smARTcontact™

\$39.95

This application lets you access Pocket Contact information with a spoken command. Tap on the smARTcontact icon and speak your contact's name and smARTcontact brings up your contact's information. Say "dial" and smARTcontact will dial your contact's phone number emitting DTMF tones through the speaker on your H/PC. Say "E-mail" and smARTcontact will instantly launch your InBox and insert your contact's e-mail address.

If the spoken command is similar to another command entry, a "best guess" contact is presented along with a list of other possible contacts. If the "best guess" is incorrect you simply tap the alternate contact on the list. I found speech recognition to be very accurate and rarely needed to use the list. As with smARTcommand, you have to train smARTcontact to associate a word or phrase with a particular contact.

SmARTcontact is available separately or in Voice Suite (including smARTcommand).

Advanced Recognition Technologies
Phone: 818-678-3999
Web: www.artcomp.com/

5

HPCVault Deluxe

\$39.95

Here is a useful Windows CE application that does not run on your H/PC at all! The backup routine on your Windows CE device archives your entire H/PC to a single file on your desktop PC. If you have to restore the backup, you have to restore the entire system. HPCVault Deluxe lets you select and restore individual or groups of files from the backup file to your H/PC (or to another desktop or notebook PC). This is one of those applications that you will not use every day. However, like a spare tire, when you need it, you really need it badly.

A free evaluation copy of HPCVault Deluxe is available.

AnyWare Consulting
Web: members.aol.com/anyware/wce/

6

15MB CompactFlash Card

\$179.95

I keep a lot of files on my H/PC: lists, Pocket Excel and Word documents, and even an occasional Pocket PowerPoint presentation. My CompactFlash (CF) Card lets me keep all of it on my H/PC without the fear of running out of the internal system RAM memory or losing the data in the event both my main and backup batteries fail at the same time (unlikely but possible).

I listed the 15 MB card because it was the one I could afford at the time of purchase. You may find that a smaller or larger capacity CF Card better fits your usage and price needs. I've never removed my CF RAM card since purchasing it and it doesn't seem to drain the H/PC's AA batteries. If you keep more than just contact and calendar information on your H/PC, you probably are a candidate for a CompactFlash Card.

CompactFlash Cards are sold by a variety of vendors, but are manufactured by the SanDisk Corporation. Visit the SanDisk Web site for a list of CompactFlash Card vendors near you.

SanDisk Corporation
Web: www.sandisk.com/buy/order.htm

7

NEC MobilePro™ 700 series

\$599-\$899

I like Windows CE's true instant-on and

Need a Custom Handheld Solution?



Complete solutions from the ground up—

Whether you need a standalone handheld application... or a complete solution integrated with a desktop or host system... we can help. From system architecture and design to application development and deployment, you can take advantage of our expertise in user interface design, communications, system integration and custom hardware interfaces.



Green Mountain
SOFTWARE

128 Prim Road, Suite 2B • Colchester, VT 05446 • TEL: (802) 865-2728
HTTP: www.GMSW.COM • EMAIL: INFO@GMSW.COM

application persistence. I like a battery life longer than two hours. I like a portable computer that weighs less than two pounds. I prefer the Pocket Outlook Contact manager's information presentation to Outlook 97's presentation.

What I don't like is the size of the keyboard. While a friend of mine can actually type reasonably well on the HP 320LX keyboard, I can not. The keyboard on the NEC MobilePro 700 is about 90% the size of my notebook PC's keyboard. This is just big enough to let me touch type on a NEC MobilePro 700. As more of these mini-notebook H/PCs emerge, you might want to see if your productivity is enhanced by using a larger keyboard.

For more on the NEC MobilePro, see the review on page 26.

8

Protect-It™ Excursion Bag

\$45

I ran into an interesting problem with my NEC MobilePro 700 H/PC. It was too big for any of the H/PC or Newton carrying cases I owned. Fortunately, I found the Eagle Creek Protect-It Excursion Bag (one of three Protect-It models produced by Eagle Creek). The Excursion Bag is designed to hold cam-corders, cameras, and other portable equipment needing a little extra protection. Its main compartment is heavily padded and the NEC MobilePro 700 fits snugly. I've also used it to carry both an HP 320LX H/PC along with a 35mm camera. The main compartment's divider prevented the devices from hitting each other. The case has three pockets on the front (two zippered) that I use to carry cables, pens, spare batteries, and cellular phone. There are also separate pen slots on the side of the bag. It has both a shoulder strap and a waist belt that can be hidden away in the storage pocket.

The Protect-It Excursion Bag is sold by authorized Eagle Creek dealers throughout the U.S. To find one, call: 800-874-9925.

Eagle Creek
Web: www.eaglecreek.com

9

Cross DigitalWriter™ PDA Stylus

\$10-100

Pilot Pentopia™ PDA Stylus

\$8-40

Most of the styluses that come with the H/PCs are too thin, too short, or both. That's why I carry a Cross DigitalWriter stylus in my pocket. The DigitalWriter stylus has the heft and feel of a conventional Cross pen and its tip provides a smooth motion across an H/PC screen with just enough "drag" to prevent it from slipping.

Pilot's Pentopia styluses are a reasonably inexpensive alternative to the Cross DigitalWriters. However, the Pentopia stylus tips do not have quite the same smooth feel. On the plus side, Pilot offers Pentopias with retractable points that can be used with one free hand. All the DigitalWriters come with caps that you have to remove to use. With the exception of the DigitalWriter DuoPoint that has a permanently exposed stylus tip, the Cross DigitalWriter models require twisting the pen to expose the stylus. This generally requires two free hands.

DigitalWriter available from Cross Pen dealers, or

Cross Pen

Phone: 800-510-9660

Web: www.cross-pcg.com/crosspcg.html

Pilot Pentopias available from Pilot Pen dealers, including SureSource, Phone: 888-777-8843, or
Pilot Web: www.pilotpen.com/pentopia/index.htm

10

IBM Modem Saver™

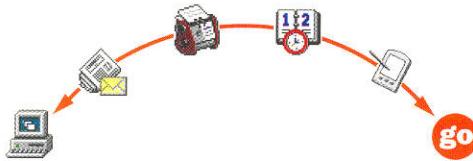
\$24.95

Not all phone systems are equal. Some organizations have digital systems, as opposed to the normal analog phone system in most homes. The phone jacks may look the same, but if you plug a modem designed for an analog system into a digital phone jack, you can fry the modem. The IBM Modem Saver has a single function: It checks to see if it's safe to plug your modem into a "strange" telephone jack. If you travel a lot and connect to unfamiliar phone systems, you should seriously consider getting an IBM Modem Saver. IBM Modem Saver is available from IBM dealers. You can also visit IBM's Web site at: www.ibm.com

That is my personal Top 10 list. Have you got a list vastly different from mine? Send it into *Handheld PC Magazine* (Email: editor@thaddeus.com) or drop by the Windows CE Forum's newsgroups and tell us about your list. You can find it by clicking on the "Newsgroup" link at computing-central.msn.com/forums/windowsce/.

CE you there! ■





Now there's a new way to carry your most vital information with you anywhere—with Palm-size PCs powered by the Microsoft® Windows® CE operating system. While designed from the ground up to be the easiest and most intuitive palm-size device, Palm-size PCs maintain the power and familiarity of Windows.

Is it possible to fit Windows in the palm of your hand?

You'll like the way Palm-size PCs keep you effortlessly up-to-date. Because of Microsoft ActiveSync™ technology, your Palm-size PC files stay continuously and automatically in synch with your desktop PC. Just connect a Palm-size PC to your computer, and it does the rest, updating your contacts, calendar, tasks, e-mail and notes. You can even download Web pages for convenient offline viewing.

If you know Windows, you can use a Palm-size PC immediately. And entering data is a cinch, whether you handwrite notes, or use the voice recorder or on-screen keyboard.

Whether your Windows-based world includes a network, a desktop PC, or a laptop, you'll want the palm-size unit that best connects with it all. Look for the logo that says "Powered by Microsoft Windows CE" to ensure secure access to every Windows-based device.

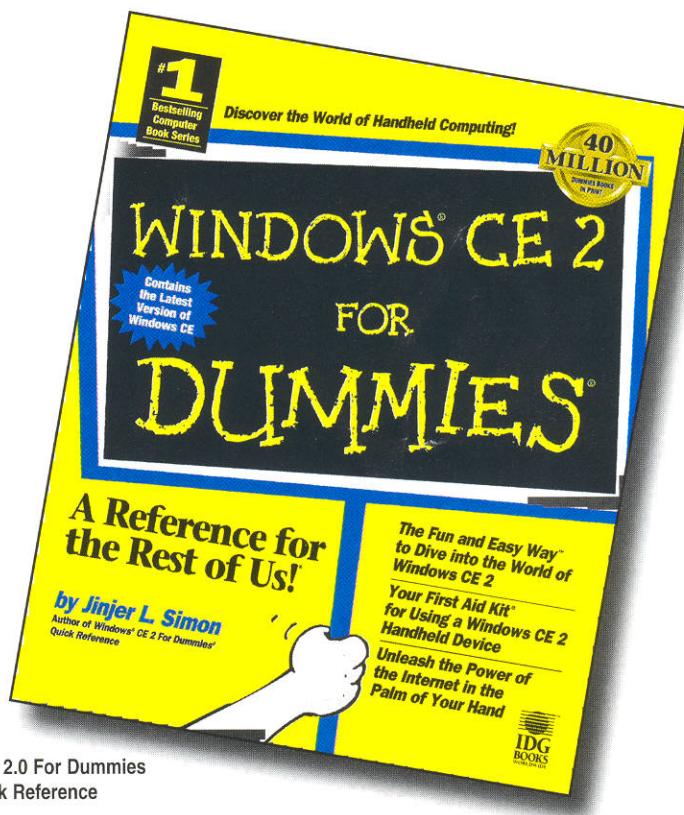
Powered by 
Microsoft
Windows CE

Palm-size PCs powered by Windows CE are available today from multiple hardware vendors. For a reseller near you or for more information about the companies that provide Palm-size PCs, go to www.microsoft.com/windowsce/ppc/.

BOOK Review

by

Rich Hall
Managing Editor



Windows® CE 2.0 For Dummies
and the Quick Reference

Jinjer L. Simon
IDG Books

For Non-Dummies As Well!

You know an operating system has made it when they do a "Dummies" book about it. Sitting on my desk are two books: Windows CE 2 for Dummies and the Quick Reference of the same name, both by Jinjer Simon and both from IDG Books Worldwide. I have avoided "Dummies" books for years because I didn't like the title — I'm not a dummy! But once I got past that emotional reaction, I found that I liked the content, layout, and organization of both books quite a bit.

Why a 360 page book about Windows CE?

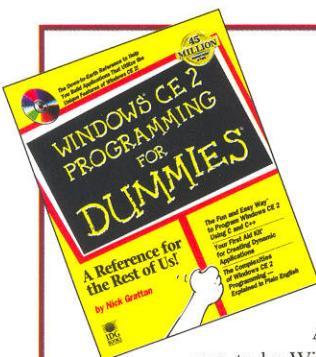
The whole idea behind Windows CE was to create handheld devices that were easy to use. Microsoft wanted the users to be able to put the batteries in, press the ON button, and go — without a steep learning curve. To a degree, they succeeded. If you are at all familiar with Personal Information Managers, using electronic calendars and phonebooks, and the rudiments of desktop

word processors and spreadsheet programs, then you can pretty much get by with the H/PC's skimpy documentation and built-in help feature. But if the H/PC is your first pocket organizer, or if you find that you need a little more help, a book like this makes a lot of sense.

Windows CE 2 for Dummies

The "Dummies" line of books are written and formatted to make complicated things simple for the average user. They do this well. The language is, for the most part, simple and straightforward. Occasionally the book goes into a little technical detail, but most of the time they put a "nerd" icon by the material indicating that you can skip it if you want.

Instead of organizing the book by applications, it is organized by the things you'll want to accomplish with your H/PC. So, for example, they have sections on what Windows CE is, what you can do with your device, how you can get it to communicate with your computer, how you can go online



Windows CE 2 Programming for Dummies

Another "Reference for the Rest of Us!" if the rest of us happen to be Windows CE software developers. This book assumes you know something about programming and have worked with the C and C++ programming languages.

Among the topics covered are:

- * Using the Windows CE API or MFC to build applications.
- * The differences between Windows 95/NT programming and Windows CE programming.
- * Creating and accessing Windows CE databases and object store files.
- * Working within the limits of the Windows CE memory.
- * Using serial communications to transfer data to and from other computers.
- * Using network support to interface with corporate networks.
- * Integrating Windows CE applications with your desktop PC.
- * Writing setup programs that install your application on a Windows CE device from your desktop computer.

Windows CE 2 Programming for Dummies comes with a CD-ROM that contains all the source code described in the book and two software demos: CE Install and Expense Tracker. The code examples are contained in working Windows CE applications that you can compile and test on any Windows CE device. You can copy relevant sections from the source code into your own applications.

Price (US): \$29.99

Windows CE 2 For Dummies -- \$19.99

Windows CE 2 For Dummies, Quick Reference -- \$12.99

Windows CE 2 Programming for Dummies -- \$29.99

Order from your local bookstore or from the publisher, IDG Books.
Phone: 888-4-DUMMIES; Fax: 317-596-5692; Web: www.dummies.com.

with it, etc. It's a good way to organize the material.

This book is a basic reference, designed to be accessed as you need specific information. It's particularly valuable if you're new to Windows CE. You'll probably use it a lot the first few months, and relegate it to the status of occasional reference as time goes by. Let's take a closer look at what's inside, section by section.

Part I: Windows CE Basics — Chapters 1 and 2

Ch 1: What is Windows CE? — contains a lot of information about understanding Windows CE and selecting a CE device. This is very basic stuff, some of it aimed at

a person considering the purchase of a handheld PC.

Ch 2: Working With Your Windows CE Desktop — Again, a more introductory section describing the Windows CE desktop, taskbar, toolbars, scroll bars, dialog boxes, Start menu and the like.

Part II: What Can I Do with My CE Device? —

This section of the book gives a thorough description of the features of each of the built-in applications. It discusses the basics of each application, including how to start it, enter and modify information, organize and view it. I appreciated the patient explanation of the Windows CE filing system, using the

file cabinet, file folder analogy.

Part III: Interfacing with Your Personal Computer

This section of the book teaches you how to connect to and synchronize with your desktop PC. It begins with a step-by-step description of how to install Windows CE Services — helpful to a new user but of limited value to someone who has already done it. More valuable to me was the tour of Windows CE Services and the discussion of synchronization, backing up and restoring Windows CE information.

Part IV: Getting Online with Windows CE

This is, to my mind, one of the most valuable sections of the book. Going online with an H/PC is supposed to be easy, but I don't find the process of doing it very intuitive (and I'm the editor of a magazine about Windows CE). I've been able to do it, but only by following simple, step-by-step instructions given to me by more knowledgeable authors.

Part V: Personalizing Your CE Device

This is another useful section — especially for the beginning user. The Windows CE manual that comes with the H/PC has one page on personalizing your handheld PC. This book has twenty, and walks you through the process in a step-by-step fashion.

I particularly appreciated the section on the Control Panel applications. These are used to customize your H/PC and almost nothing is said about them in the Windows CE manual. The more important Control Panel applications are covered in detail, and the rest briefly and clearly.

Part VI: Part of Tens

All Dummies books have a Part of Tens section. It's a kind of a catch-all section, organized in list form. Windows CE 2 for Dummies has two lists. The first list is titled: Ten Ways to Spend Money on Your Windows CE Device, describes things you can buy for your H/PC and ways you can save money. All suggestions were good, but in the cases of modems, memory cards, paging devices, and GPS receivers, I thought the book needed information on where to go to purchase, or find out more about them. I think most H/PCs come with a catalog of products from independent vendors, and perhaps that could have been mentioned here.

The second list is titled: Ten Common

Problems You May Encounter with Your CE Device (things that can go wrong and how to fix them). This is a well-thought out list of common problems and their solutions. One point, "The Device Can't Locate My Personal Computer," describes the problem of not being able to communicate between the H/PC and a desktop PC. I suppose it could have gone into more detail about solving the problem, but this is a Dummies book. The author gives some good, simple advice. If that doesn't solve the problem, she suggests you "...ask one of the nerdy computer people to look at your personal computer..." Not all computer people are nerds, but asking someone who knows is an excellent, time saving solution to any problem. I would probably put it high on the list of solutions to any computer-related problem.

A good general reference

The book is promoted as "A Reference for the Rest of Us!" It is, for the most part, very simply written and easy to understand, with step-by-step instructions for everything. If you are the slightest bit nervous about using a new computer or new piece of software, this is a good way to learn. If you get an H/PC, find you are having difficulty, and want a more detailed look at using it, this book is for you.

Windows CE 2 for Dummies — Quick Reference

I'll do a quick review for the Quick Reference. It's a more portable version of Windows CE 2 for Dummies, containing much of the same information in a condensed form. Its 212 pages organize Windows CE knowledge into 12 tasks (i.e., Maintaining an Electronic Calendar, Organizing Your Tasks, Dealing with E-Mail, etc.).

I compared some of my favorite sections in the full reference to the Quick Reference. All of the information was covered, though, of necessity, in slightly more abbreviated manner without as many graphics showing you what the screens look like.

It was almost as useful as the full reference, just a little less expensive and more portable.

Which one to buy?

I believe these are the only two Windows CE 2.0 books out there at the present time. Both are good general references, filling a gap in documentation. If you find yourself needing more than the small user guide that came with the H/PCs, either of these will do.

The Quick Reference is designed for readers who want something to carry along with them. It's almost as complete and easy to use as the full version. I could see it being preferred by H/PC users who spend a lot of time on the road.

However, I don't travel a lot, and when I do, I don't take any unnecessary books along. If I'm going to buy a reference, I want the most complete one I can find. I don't mind it being slightly bigger if it's easier to understand and more complete. For this reason, I prefer Windows CE 2 for Dummies (the full reference). ■

Some of the Things I learned reading Windows CE for Dummies

Below is a brief list of some of the things I learned and re-learned from the book. This is just a partial list — there's lots more.

- ❖ How to find a lost appointment (press CTRL-F).
- ❖ How to print out a Calendar (press CTRL-P and select options).
- ❖ How to customize Contact's list view to show the information you want (Select Customize Columns in Tools list).
- ❖ The fact that you can set an alarm for an item in your Task list to remind you a specific number of minutes, hours, days and weeks before you Start the tasks or the task is Due.
- ❖ The fact that you can save Pocket Word documents from Windows CE 2.0 in Pocket Word 1.0 format and open them on CE 1.0 machines.
- ❖ How to create an outline in Pocket Word (select Outline in View menu).
- ❖ How to password protect a Pocket Word document (select the Password option from the File menu).
- ❖ How to insert a mathematical function into a Pocket Excel worksheet (highlight desired cell, select Insert Function option of the Tools menu).
- ❖ How to quickly sum up data in a row or column of Excel cells (place cursor at either end of a row or column of numbers and press the AutoSum button (the Greek letter Sigma to the left of the \$ button on the top toolbar).
- ❖ How to sort Excel data (highlight data and select Sort from Tools menu).
- ❖ A list of formatting that is lost when you convert an Excel worksheet to Pocket Excel (see page 183).
- ❖ Empty Recycle Bin, Temp and Temporary Internet Files folders if you are running out of storage space.
- ❖ Don't delete files from the Windows folder.
- ❖ How to synchronize the H/PC's time with your desktop PCs time (ActiveSync Options dialog box).
- ❖ Don't use your H/PC while performing a backup from Windows CE Services.
- ❖ Configure your Communications Properties screen to turn off call waiting if you have that service.
- ❖ When you transfer an email message from your H/PC to desktop PC, the date of the message is changed to the date of the transfer.

PC COMPANION NEW PRODUCTS

The PC Companion Products listed here include hardware, software, services, and resources. Prices listed are suggested retail price. Unless otherwise indicated, software products are delivered on floppy disk. Listings do not represent an

endorsement by the editors. To announce in our next issue, please send an email message to editor@thaddeus.com. For live links to the web sites mentioned in this section, visit our web site at www.thaddeus.com, or purchase our PowerCD.

Hardware

Accessories

RhinoPak 2000 for your H/PC

A "sport-ute" case for H/PCs. Features cordura, or ballistic nylon outer, belt loops, padded inner shell, securing straps, battery pouches, pen/stylus holder. Includes: Utility pockets for checkbook/passport, disks, credit/business cards, keys, and even your Swiss Army Knife. Available in black/tan or black.

Price: \$49.95

Use with H/PCs with dimensions of 7.25" X 4.25" X 1.25" or smaller.

Contact: Rhinoskin

Phone: 307-734-8833; Fax: 307-734-8868

Email: info@rhinoskin.com

Web: www.rhinoskin.com

Barcode Scanners

H/PC Bar Code Scanners

Laser, CCD, or contact wand bar code scanner kits for Windows CE-based H/PCs or Windows 95-based notebooks. Read bar codes directly into any application. Kits include bar code scanner, decoder PC-card, drivers and item track software.

Prices start at \$295.

Use with H/PCs and Palm-size PCs

Contact: Momentum Technologies, Inc.

Phone: 785-843-5754; Fax: 785-843-0039

Email: dfonseca@idir.net

Web: www.momtec.com

PC CARD READER

Accent card readers

Small PC card reader that connects to a

desktop PC and lets you access CompactFlash cards from your desktop PC. Swap data between an H/PC and desktop PC, write new and updated files to the card, and more. Simply plug the printer pass-through connector into the computer's printer or SCSI port to provide CompactFlash or Type III card slot on any PC.

Price: \$varies

Contact: Prima International

Phone: 510-724-3000

Email: sales@prima-intl.com

Web: www.prima-intl.com

Connectivity

2-Print-It

Parallel converter cable lets you connect your H/PC to a printer or other parallel port device. High-speed built-in buffer allows for reliable communications with no external power required. No additional software is needed for Windows CE 2.0 users.

Price: \$49.95

Use with H/PCs

Contact: Pygmy Computer Systems

Phone: 888-807-4HPC or 305-255-1212

Fax: 305-255-1876

Email: sales@pygmy.com

Web: www.pygmy.com

GPS

Marco Polo GPS Card

Gives Windows CE handheld users accurate information about their current position (longitude, latitude and altitude) as well as their speed and the direction in which they are traveling. A choice of mapping and logging software comes with Marco Polo, including GPS-FIX for Windows devices and Teletype GPS for Windows CE handhelds. The Teletype software is supplied with US or UK maps (others available shortly).

Price: from \$699

Use with H/PCs

Contact Peak Development, Ltd., England

Phone: + 01489 796979; Fax: +01489 796798

Email: pcmcia@peak-development.co.uk

Web: www.peak-development.co.uk

PC Cards

VersaCard

A CompactFlash memory card with Type II card adapter. Lets you store and transfer data, images, or other files between digital cameras, notebooks, H/PCs and Palm-size PCs. It is compatible with any CompactFlash slot, and PC Card Type II or III slots. See web site at www.pny.com for a complete compatibility list.

Price: \$varies

Use with H/PC, Palm-size PCs, AutoPC

(VersaCard is available in 8, 15, and 30MB capacities)

Contact: PNY

Phone: 800-PNY-7079 or 973-515-9700

Web: www.pny.com

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Wireless

BayBeamer infrared drive

Add wireless infrared data transfer capability to a desktop computer. BayBeamer Infrared Drive is IrDA compatible and can communicate with any electronic device that is equipped with a working IrDA infrared port. BayBeamer is available in 3.5" or 5.25" form factor. It is easily installed in any spare drive bay. The range of communication is 3 to 6 feet, depending on the device it is communicating with.

Price: \$75.00

Contact: Dealer list available on the BayBeamer website

Web: www.baybeamer.com

One-Touch

Provides users of H/PCs or Palm-size PCs with the ability to connect up to their SkyTel or MCI two-way pager and send and receive pages or email from their Windows CE device. Includes connectivity cable and necessary software. User must already subscribe to SkyTel or MCI services and have the two-way pager.

Price: \$69.95

Use with H/PCs or Palm-size PCs

Contact: JP Systems

Phone: 972-484-5432

Web: www.jpsystems.com

Software

Communications

Cadenza

A Lotus Notes client for the Handheld PC powered by Windows CE 2.0. Cadenza can be used to remotely send and receive mail, schedule meetings, synchronize calendar and diary data, and backup and restore data from the Handheld PC.

Cadenza Forte

Includes all the features of the regular Cadenza product plus the ability to download, store, view, edit and create general Notes documents and replicate document additions and changes.

30 day trial versions of both Cadenza and Cadenza Forte are available for download.

Use with H/PCs

Contact: CommonTime, Ltd. UK

Phone: +44 0 114 285 4250

Fax: +44 0 1332 520932

Email (Sales): sales@commontime.com

Web: www.commontime.com/index.html

IMAP Force v. 2.0

An IMAP4 e-mail client for Windows CE, designed to let a busy mobile user quickly browse through his/her most important messages, without having to download either the entire message or the large attachment(s). IMAP Force also allows the user to send mail messages (compose, reply and forward) using SMTP.

Price: \$59.95

Use with H/PC with Windows CE 1.0 and 2.0

Contact: MobileSoft

Web: www.mobilesoft.com

Developer: Ruksun Software Technologies, Ltd.

Phone: +91 212 678286 or +91 212 678288

Fax: +91 212 678866

Email: info@ruksun.com

Web: www.ruksun.com/wince/

Internet Force v. 1.5

An Internet suite that consists of a bundle of Scotty FTP - an ftp client, Telnet Force - a telnet client and Net Force - a set of network administration tools.

Price: \$69.95

Use with H/PC

Contact: MobileSoft

Web: www.mobilesoft.com

Developer: Ruksun Software Technologies, Ltd.

Phone: +91 212 678286 or +91 212 678288

"This product is to a 'to do' list as a spreadsheet is to a calculator."

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Fax: +91 212 678866
 Email: info@ruksun.com
 Web: www.ruksun.com/wince/

MediHPC

Lets you connect any Windows CE H/PC to Meditech host systems. Windows CE 1.0 and 2.0 compatible.

Price: \$59.95. (Free demo at website)

Use with H/PCs

Contact: Cambridge Computer Corp.

Phone: 800-462-4481; Fax: 203-288-0009

Web: www.cam.com/medihpc.html

News Force v1.0

A Windows CE based news client, supporting both on and offline news reading. Users can read news articles from all your favorite USENET newsgroups. Users can also download relevant articles from the Internet to their H/PC and read them offline, or reply or forward them.

Price: \$25.00

Use with H/PC with Windows CE 1.0 and 2.0

Contact: MobileSoft

Web: www.mobilesoft.com

Developer: Ruksun Software Technologies, Ltd.
 Phone: +91 212 678286 or +91 212 678288
 Fax: +91 212 678866
 Email: info@ruksun.com
 Web: www.ruksun.com/wince/

pkHPC

Allows you to connect any Windows CE H/PC to Pick, Stratus and Unix host systems.

Price: \$39.95 (Free demo at website)

Use with H/PCs

Contact: Cambridge Computer Corp.

Phone: 800-462-4481; Fax: 203-288-0009

Web: www.cam.com/pkhp.html

Term Force v1.0 alpha 2

A terminal application for Windows CE. You can use Term Force to connect to other machines or to a BBS. Term Force also allows users to transfer files using the X-modem protocol. The current version of Term Force supports TTY / VT100 terminal emulation.

Use with H/PC with Windows CE 1.0 and 2.0

Contact: Ruksun Software Technologies

Phone: +91 212 678286 or +91 212 678288

Fax: +91 212 678866

Email: info@ruksun.com

Web: www.ruksun.com/wince/

vxHPC for Windows CE

Lets you connect any Windows CE H/PC

to BBS's, Digital, Unix, Wang and Internet host systems. Features include: Full Digital VT52, VT100, VT101, VT102, VT220, VT320, VT420 and Wang 2110A emulation; serial, modem and Telnet (TCP/IP) communications capability; full color support; vxHPC allows copy/paste between host sessions and Windows CE documents; script processing is available for automatic logon's; capture screen and printer text to any selected file; Xmodem/Ymodem/Zmodem and text file transfer capability; hot keys for frequently used commands and keyboard remapping; Windows CE 1.0 and 2.0 compatible.

Price: \$29.95 (Free demo at website)

Use with H/PCs

Contact: Cambridge Computer Corp.

Phone: 800-462-4481

Fax: 203-288-0009

Web: www.cam.com/vxhpc.html

vxUTIL

A free collection of Internet utilities for devices powered by Windows CE 1.0 and Windows CE 2.0. Included are: Finger, Lookup, Time Server, and Whois.

Freeware

Contact: Cambridge Computer Corp.

Phone: 800-462-4481; Fax: 203-288-0009

Web: www.cam.com/vxutil.html

Whack Force v. 1.0 beta 0.60

An offline-browsing tool that enables the user to download Web pages with embedded images and other pages linked from the

main page. Whack Force facilitates offline browsing by allowing the user to batch-download Web sites and view them offline in Pocket Internet Explorer.

Use with H/PC

Contact: Ruksun Software Technologies

Phone: +91 212 678286 or +91 212 678288

Fax: +91-212-678866

Email: info@ruksun.com

Web: www.ruksun.com/wince/

Connectivity

Pocket Carbon Copy for Windows CE

Part of the Compaq's Carbon Copy 32 V.5.0 package, this program lets you remotely access and control another PC, workstation, or Windows NT server directly from your H/PC. View and edit files on your desktop from your H/PC; send and receive email; update databases; and more.

Wizards simplify installation and user configurations; Navigation tools optimize your view of the remote PC; Remote Control: Performance features increase remote control speed; Multi-level security protects sensitive information; Connect via modem, serial, network, Internet.

Pocket Carbon Copy is included with versions for Windows CE, Windows 95, and Windows NT.

Carbon Copy 32 V 5.0 - \$139.95

Use with H/PCs and desktops running Windows

95/98/NT

Contact: PC Connect

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Contact: Compaq
Phone: 800-822-8224 or 781-551-1000
Fax: 781-551-1021
Web: www.compaq.com

Database

Spyglass Mobile Forms Database

A mobile database and forms data collection application for Windows CE handheld PCs (H/PCs). Mobile Forms Database lets you to create handheld databases that fit your mobile data collection needs of any of the latest Windows CE Handheld devices. The database is created and exists on your handheld device for easy collection of important data. Exchanging data with your desktop is made easy with the import/export functionality.

Price: \$79.95
Use with H/PCs
Sales contact: MobileSoft
Web: www.mobilesoft.com
Phone: 800-773-1523 or 330-673-7110

Developer contact: Spyglass
Web: www.spyglass.com

File Manager

CommandCE

A Windows 95-style file explorer with a directory tree view on the left and a standard file view on the right. Features include: Tree view with moveable splitter bar (not available in CE Explorer); drag and drop to move or copy files; Cut / Copy / Paste and Paste Shortcut; Delete, Rename and New Folder; Double tap executes file or opens folder; Large, Small, List, and Details views (List not available in CE Explorer); arrange icons by name, size, type, date and auto; all columns sortable in ascending and descending order (descending not available in CE Explorer); more.

Free Beta demo

Contact:
Web: www.ourworld.compuserve.com/homepages/ddycus/cesoftware.html

Finance

bTRACK

Track time, expenses, and mileage on your H/PC and Palm-size PC. bTRACK lets you record expenses as they occur, keep accurate records of time with the stopwatch feature, record mileage traveled and expenses, integrate everything into one report, with totals available by all clients and all projects or by single client and project, record expenses to the penny with the unit Soft

Input Panel (SIP), upload information to your corporate expense reporting structure, and more. bTRACK ships with a special API for easy integration into any corporate expense reporting program.

Single User Price: \$89.95 Corporate pricing available
Use with H/PC and Palm-size PCs
Contact: BSQUARE
Phone: 888-820-4500 or 425-519-5900
Email: sales@bsquare.com
Web: www.bsquare.com

Calcy Force v1.0

A Scientific Calculator for the H/PC, providing users with "an intuitive interface to perform all the basic functions you need from a calculator." Supports base conversions, arithmetic, logical, trigonometric and logarithmic functions.

Price: \$35.00
Use with H/PC
Contact: Mobilesoft
Web: www.mobilesoft.com
Developer: Ruksun Software Technologies, Ltd.
Phone: +91 212 678286 or +91 212 678288
Fax: +91 212 678866
Email: info@ruksun.com
Web: www.ruksun.com/wince

Expense Force v1.0

Expense Force is a simple expense tracking utility to keep an account of daily expenses. Expense Force records expenses on an expense page, which has a name, password (if needed) and a base currency.

Use with H/PC
Contact: Ruksun Software Technologies
Phone: +91 212 678286 or +91 212 678288
Fax: +91 212 678866
Email: info@ruksun.com
Web: www.ruksun.com/wince/

Financial Consultant for the Palm-size PC v2.0

The Financial Consultant v2.0 is an advanced business calculator that combines many of the most popular features of HP and TI calculators. In addition to regular RPN and Algebraic input, Solver forms provide a unique "fill in the blanks" environment for solving a range of business calculations without having to memorize obscure keystrokes. Other features include: Statistics and Scientific functions, Investment analysis, Date Calculations, Loans, Leasing and Mortgages, Onscreen Amortization tables, extensive online help and user guide.

Price: \$39.95
Use with H/PCs or Palm-size PCs
Contact: LandWare, Inc
Phone: 800-526-3977 or 201-261-7944
Fax: 201-261-7949



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Email: sales@landware.com
 Web: www.landware.com

KeepTrack

Lets you "Keep Track" of your Credit, Debit and ATM card transactions. Record your withdrawals and deposits, debits and advances, charges and credits, transfers and balances, and cash expenses in any currency.

Price: \$16.95
 Use with H/PCs
 Contact: Ilium Software
 Phone: 888-632-5388 or 734-973-9388
 Fax: 734-973-2640
 Email: info@iliumsoft.com
 Web: www.iliumsoft.com

MetaStock for Windows CE

Investment charting and analysis software developed for H/PCs. View daily, weekly or monthly charts of any stock, mutual fund, or index. Chart your securities in any of four different charting styles: Bars, Bars with Open, Candlesticks, and Lines. See the volume activity of each security shown as a histogram at the bottom of the chart. Zoom and scroll for a better view.

Included with MetaStock for Windows CE is a full year's worth of price updates from Reuters Trend DataLink service. You can download updates on stocks, mutual funds, and indices via your Internet connection.

Free trial version available at www.equis.com. Only limitation is you cannot add new securities.

Price: \$89 for 12 month license
 Use with H/PC with Windows CE 1.0 or 2.0
 Contact: Equis
 Phone: 800-882-3040 or 801-265-8886
 Email: sales@equis.com
 Web: www.equis.com

Pocket MBA-Calc

Business tool for business, retail, finance, banking, and real estate industry professionals. An advanced, easy-to-use business calculator that operates like the Texas Instruments BA-II Plus calculator, but with a number of additional features. Using algebraic logic, it performs the following calculations as well as others: Annuity/Actuarial, Amortization, Arithmetic, Bond, Compound & Simple Interest, Date, Depreciation, Discounted Cash Flow (NPV, IRR), Loan/Mortgage, Interest Conversions, Markup and Math Functions. It also incorporates a tape display.

Price: \$39.95; bundle price \$49.95 (when bundled with the desktop version of MBA-Calc)
 Use with H/PC
 Contact: Odyssey Computing
 Phone: 800-965-7224 or 619-675-3660
 Fax: 619-675-1130
 Email: info@odysseyinc.com
 Web: www.odysseyinc.com

Games

5-Pack Games Compendium

Offers handheld users five fun ways to test their strategy and skill. Includes:

- HomeRun – the classic card solitaire game with a new twist. Selection of card designs.
- Checkers – the traditional board game known as Draughts in some parts of the world.
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- Theole – a challenging Reversi master. Play against computer or friend. Variable skill levels, 2D and 3D board views.
- Enigma – use deductive skills to reveal the hidden code. Play a friend or the computer.

Price: \$69
 Use with H/PCs
 Contact (USA, Canada): New World Technologies
 Phone: 800-886-4967 or 212-941-4633
 Fax: 212-274-8527
 Contact (Europe): Purple Software Ltd.
 Phone: +44 0 171 387 7777; Fax: +44 0 171 387 1188
 Email: info@purplesoft.com
 Web: www.purplesoft.com

Casino Royal for H/PC v1.0

A collection of casino games including Blackjack, Ride On, Casino Stud, 7-card Casino Stud and Video Poker. Full Colour support. Compatible with the original 1.0 Windows CE as well as 2.0. Each game can be played with a stylus or from the keyboard. Features highly configurable game play. Includes Spanish 21 and Double Exposure, Five types of Video Poker,

On-screen payout tables and much more.

Price: \$39.95
 Use with Palm-size PCs

Contact: LandWare, Inc
 Phone: 800-526-3977 or 201-261-7944
 Fax: 201-261-7949
 Email: sales@landware.com
 Web: www.landware.com

Cruel v1.0

Variation of the classic Solitaire game. The goal of Cruel is to move all the cards from the lower stacks up to the suit stack.

Price: \$9.95
 Use with H/PC
 Contact: Mobilesoft
 Web: www.mobilesoft.com
 Developer: KSE Software
 Phone: +49 211 21 31 22; Fax: +49 211 21 31 29
 Email: sales@kse.de

Digital I Ching v1.0

H/PC version of the ancient Chinese divination tool called the book of I Ching. Consult this interactive book in your decision-making.

Price: \$14.95
 Use with H/PC
 Contact: Cloudragon Design
 Phone: 408-476-6662
 Email: support@cddesign.com
 Web: www.cddesign.com/DDCE.zip

PipeGame

PipeGame is a fast-flowing game of speed, strategy, and plumbing. Beta 3 with Bonus level, password, pause, and help.

Free beta demo
 Contact: EZOS s.a. Belgium
 Phone: +32 2 387 20 00; Fax: +32 2 387 20 10
 Email: info@ezos.com
 Web: www.ezos.com/Staff/bhu/bhuCEshareware.asp

Pocket-Jongg v3

New version of the MahJongg-like puzzle game for Windows CE 1.0 and 2.0 H/PCs and the new Palm-size PC. This version

A Windows CE based news client, News Force supports both online and offline news reading. Users can read and download news articles from their favorite USENET newsgroups. Users can download relevant articles from the Internet to their H/PC and read them offline, or reply or forward them.

FEATURES

- ▶ Allows subscribing to and unsubscribing from multiple newsgroups
- ▶ Offline News reading and article composition feature
- ▶ Supports threading of news articles
- ▶ Batch downloading of news articles
- ▶ Posting and replying to newsgroups
- ▶ Exhaustive sort and search capabilities

\$25.00

Works with
 Windows CE
 1.0 and 2.0

Available at:
<http://www.ruksun.com>
 or
 E-mail: info@ruksun.com

 **Ruksun Software Technologies**
<http://www.ruksun.com>

NEWS Force

adds a modified tournament mode and multiplayer capability via IrDA, LAN and Internet links. Game can be closed at any time and restarts to the same board position.

Price: \$19.95
Use with H/PCs and Palm-size PC
Contact: C-Labs
Phone & Fax: 425-868-0376
Email: jcr@c-labs.com
Web: www.c-labs.com

Reversi 98

A version of the classic game of strategy. Reversi 98 lets you choose different starting layouts, undo and redo moves to study strategy; and save and load games played. On-screen move list reminds you about the moves made. Also includes undo feature and slow motion replay.

Price: \$19.95
Demo version available for download at website
Use with H/PCs
Contact: The Web Mill
Phone: 415-898-4877
Email: clubce@webmill.com
Web: www.webmill.com/ce

Information

AutoMate

Keep your car, health and home maintenance information organized and convenient in your H/PC. Track dates, mileage, repairs, maintenance, and costs! AutoMate will calculate your gas mileage and remind you when it's time to do any work. Use AutoMate to record your health histories, and it will remind you when it's time to make an appointment. Keep all kinds of personal history records with one convenient program.

Price: \$24.95
Contact: Ilium Software
Phone: 888-632-5388 or 734-973-9388
Fax: 734-973-2640

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Check them out today,
and see how useful
your HPC can be!



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Email: info@iliumsoft.com
Web: www.iliumsoft.com

Internet

bMOBILE News 3.0

Lets you access thousands of newsgroups from your H/PC and Palm-size PC. Palm-size PC version optimized for easy use with features that can be commanded by the rocker switch and escape button on the device. The user interface (UI) is also optimized for quick information viewing on Palm-size PCs.

bMOBILE News requires a desktop PC running Windows 95 or Windows NT (for installation only), an H/PC or Palm-size PC running Windows CE, a modem, a phone line (landline or wireless), and internet service.

Price: \$29.95
Use with H/PCs and Palm-size PCs
Contact: BSQUARE
Phone: 888-820-4500 or 425-519-5900
Email: sales@bsquare.com
Web: www.bsquare.com (for a list of resellers)

Navigation

Pocket Universe

Astronomy software for the Handheld PC that plots the positions of the sun, moon, planets, and nearly 5,000 stars. It includes lunar phases, outlines for major constellations, and advanced features like the ability to lock on a planet and watch its position during time changes. A time-limited preview version is available for download.

Price: \$TBA
Contact: Sticky Software
Email: universe@sticky.net
Web: www.users.tibus.com/john.kennedy/Universe/universe.htm

Street Wizard for CE

Comes with desktop PC and Windows CE applications and a CD-ROM that includes street-level maps for the entire USA, except Alaska. The desktop application is a complete mapping product that lets you select the map areas you want to download to your Windows CE device. You select the desired area and are shown the file storage space required on the Windows CE device. After confirmation, the maps are downloaded.

The Windows CE application lets you lookup addresses, airports and various other places. You can zoom, pan, and scroll to display areas of interest. Street Wizard for CE will automatically calculate the best route between any two or more street addresses. The route is then highlighted and the text directions displayed on the screen.

Price: \$74.95
Use with H/PCs
Contact: Adept Computer Solutions, Inc.
Phone: 800-578-6277 or 619-597-1776
Fax: 619-597-1774
Email: sales@streetwizard.com
Web: www.streetwizard.com

Note Taker

HPC Notes 2.0

HPC Notes 2.0 is the new version of the popular notes organizer for Handheld PCs. HPC Notes 2.0 now includes the desktop module which runs on Windows 95, 98, and NT, and synchronizes notes with your H/PC. Some new features include a built-in spell checker (Desktop only), direct import and export of Microsoft Outlook notes and email messages, support for PalmPilot's MemoPad, email capabilities, user reminders, and much more.

Price: \$59.95
(Upgrade current user \$35)
Contact: PhatWare Corp.
Phone: 650-299-0110; Fax: 650-299-1369
Email: info@phatware.com
Web: www.phatware.com

Pen Entry

One Cat Doodler for Windows CE

Lets you use your stylus just like a pen on paper to create multiple page notes with labeled pages. Automatically groups pen strokes into coherent figures. Vector format dramatically reduces file size compared to a bitmapped file. Move, change properties, or delete figures. Smoothing option reduces the

jagged edges in your doodling. Multiple color and width pens. Exportable to a Windows CE Bitmap.

Price: \$20
Use with H/PC
Contact: One Man and a Cat Software
Phone: 423-877-1731
Email: info@onemanandacat.com
Web: www.onemanandacat.com

PenScript v2.0

Adds the ability to mix writing and drawing using electronic ink with font-based (typed) text on an endless sheet of "paper." Compose and edit handwritten or typed documents. Add sketches or diagrams using the provided drawing tools and embedded paper types, including graph paper and blank paper.

Price: \$49.95
Use with H/PC
Sales contact: Mobilesoft
Web: www.mobilesoft.com
Developer: Marathon Development Corporation
Phone: 510-988-9274; Fax: 510-210-1211
Email: marathon@value.net
Web: www.marathondc.com

Specialized

PocketFloor

PocketFloor is designed for anyone in retail sales and estimation for floor covering. An easy to use interface that calculates square feet, square yards, or square meters. At the same time it is calculating the seam locations, the stock layout for cutting the material, padding, waste, labor, tax, and total cost to the customer.

Price: \$750 for monochrome, \$1250 for color.
Use with H/PC (will be pre-loaded with the PocketFloor software and is run under the Windows CE 2.0 platform.
Contact: RFMS Software, Inc.
Phone: 800-536-7367; Fax: 205-562-8788
Email: sales@rfms.com
Web: www.rfms.com (Download a demonstration)

scyField-HPC

Computer Assisted Personal Interviewing (CAPI) software for the H/PC. The software is designed to run simple and complex surveys with features to automate question routing, randomization, and arithmetic. It also can share data with Surveycraft's questionnaire design, capture and analysis software for the desktop PC.

Use with H/PC
Contact: Surveycraft
Phone, (Australia): +61 3 9432 8555, (Japan) +81 3 5245 5700, (UK) +44 171 712 0101
(USA): 513 871 2580

Fax: (Australia) +61 3 9434 423, (Japan) +81 3 5245 5708, (UK) +44 171 418 0500, (USA) 513 871 4269
Email: info@surveycraft.com
Web: www.surveycraft.com/Products.html

Sports

Abner the Pocket Scorecard for Windows CE

Lets baseball enthusiasts and statisticians keep score using their H/PC running Windows CE. Abner's companion roster-management software allows you to keep tabs on your entire season. Has an easy-to-navigate interface with the look and feel of a paper scorecard. Other features include: Auto tallying of statistics; Desktop roster management and printing (not available in beta release); Softball scoring options; Online help (not available in beta release)

Free Beta demo
Contact: Golem Software
Web: www.golemsoft.com/pocket.htm

PocketCaddie

An interactive golf caddie/scorecard system for Windows CE. Designed for both Palm-size PCs and Handheld PCs, PocketCaddie allows the user to do simple scorekeeping to individual shot recording. Course layout, notes, ratings, yardage, etc. may be recorded and saved. PocketCaddie provides the ability to export Web pages that describe the game, scoring history or course the player is playing on.

Price: \$39.00
Use with H/PCs and Palm-size PCs
Contact: Softscribe (Canada)
Phone: 604-618-1977; Fax: 604-737-4780
Email: info@softscribe.com
Web: www.softscribe.com

Lets you record individual and team basketball statistics. Suitable for use by talent scouts, team managers, and even avid fans. When used with PocketHoops Manager for Windows 95, the software can track, manage, and analyze statistics. PocketHoops is available in personal, team, and professional editions.

Price: \$39.00
Use with H/PCs
Contact: Softscribe (Canada)
Phone: 604-618-1977; Fax: 604-737-4780
Email: info@softscribe.com
Web: www.softscribe.com

Translation

Language A la card

ParaWin CE — Provides a user with a capability to read, type and print text in Western, Central European, Cyrillic, Greek, Turkish, Baltic languages. Designed for any H/PC running the Windows® CE 2.0 operating system.

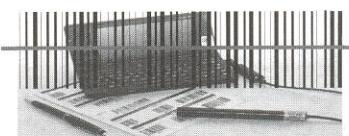
Price: \$50

Pocket CONTEXT Dictionary — An intelligent electronic dictionary for selected pair of languages. Type in a word or a phrase and with one touch find its translation in a predefined context. Dictionaries available in Russian, Common Words Professional, Business, Legal, Aviation, Russian Idioms, Finance & Economics, International Fishing, InfoTech Abbreviations, Religious, Computer, English Grammar Reference, Technical, Medical, Russian Heritage Dictionary, Foreign Words in Russian Language, Oilfield Technology, Food Industry, Military — Political, Advertising & Marketing, Chemistry.

Pocket CONTEXT interface program: \$50; Specialized dictionaries: \$25 - \$50

Pocket ORFO — Enables a user to proof

Windows® CE Handheld PC Bar Code Scanners



Get thousands of scans with our battery-friendly line of laser, CCD or contact wand bar code scanners. Input bar codes directly into any application on your WinCE H/PC or Win95 mobile computer with Momentum's PCMCIA Type II ScanCard™. Scan Card includes KB wedge drivers and Item Trak software. Now, get dedicated data collector benefits at a fraction of the cost!



Ph: (785) 843-5754 Fax: (785) 843-0039
website: www.momtec.com

H/PC Scanner Kits
Starting At Just
\$295!

text for correctness in accordance with the complex morphological rules of Russian, Spanish, German, or French.

Price: \$50

Pocket PROMT — Provides a smooth translation between Russian and English in accordance with linguistic links in a sentence. Contains: dictionary of 300,000 words and expressions; mechanism to select translation direction as well as its context.

English to/from Russian: \$150

English to Russian: \$100

Russian to English: \$100

Card-Link

for SRAM and ATA flash memory cards



Why struggle with cables? Transfer files the quick and easy way by adding a memory card slot to your desktop PC.

- Works like a floppy disk drive
- Connects to a desktop parallel port

\$179.95 Model CL680 for Type I and Type II cards
189.95 Model CL683 for Type I, II and III cards

199.95 Model CL682 has 2 slots for Type II

We carry adapters for compact flash cards.

Steele Creek Technologies, Inc.

14035 Appling Lane, Charlotte NC 28278
Phone or Fax (704) 588-1780
Find latest drivers at www.cardlink.com

PocketPad for Windows® CE

- Digital Ink notepad for Windows® CE Handheld PC
- Three user defined pen sizes
- Five pen types
- Optional grid lines
- Insert signatures into Microsoft® Pocket Word
- **Free** demo at Web site located at <http://www.imagine.com>

PocketPad is an easy to use, simple digital ink notepad for your Windows® CE-based Handheld PC. **PocketPad** utilizes the pen input from the screen for a quick way to capture your ideas, record meeting notes, and draw diagrams and sketches as if you had a pen and paper.

Imagineering, Inc.

Phone (801) 233-8325 Fax: (801) 256-9359
Sales@imagine.com
<http://www.imagine.com>

Use with H/PCs

Contact: SmartLink Corporation
Phone: 800-256-4814 or 714-552-1599
Fax: 714-552-1699
Email: smrlnk@smartlinkcorp.com
Web: www.smartlinkcorp.com

H/PCs. Lets you view and terminate process; view, show, hide and close windows; view PCMCIA status and driver; and view the status of the battery and memory.

Free beta demo

Use with H/PC
Contact: EZOS s.a. Belgium
Phone: +32 2 387 20 00; Fax: +32 2 387 20 10
Email: info@ezos.com
Web: www.ezos.com/Staff/bhu/bhuCEshareware.asp

Utility

ArtsKey v. 1.1

Switch the keyboard layout of your Handheld PC from English to one of more than a dozen Western European language families.

Price \$25

Use with H/PC
Contact: Mobilesoft
Web: www.mobilesoft.com

Developer: ArtSoft, Ltd. Russia
Phone: +7 095 962 6793; Fax: +7 095 962 6793
Email: info@artsoft.ru

bPRINT for Palm-size PCs

Printing utility for the Windows CE H/PC and Palm-size PC. New version optimized for easy use on the Palm-size PC, letting you print to HP-PCL, ESC/P 2, Epson-compatible printers, print text (.txt), bitmap (.bmp), rich text format (.rtf), and TIFF (.tif) files, print via infrared port or serial cable, preview the document before printing, adjust fonts and margins, and more.

Price & Availability: To be announced
Use with H/PC and Palm-size PCs
Contact: BSQUARE
Phone: 888-820-4500 or 818-888-9348
Email: sales@bsquare.com
Web: www.bsquare.com

Dial-a-matic for Windows CE

Place phone calls on the H/PC or Palm-size PC from within any CE application using a modem or the Handheld PC speaker. Simply highlight a phone number inside Contacts or any CE application, double-tap the Dial-a-matic icon on the task bar and tap OK to make a call. You can dial using a modem or without a modem (Dial-a-matic generates DTMF telephone tones that will dial most telephones).

Price: \$19.95
Use with H/PCs and Palm-size PCs
Contact Applian Technologies
Phone: 415-831-1499; Fax: 415-668-6068
Web: www.applian.com

EZTaskMan

A task manager for Windows CE 2.0

HPC NetProfile

A utility for managing multiple profiles for connecting to the Internet or other TCP/IP-based networks with a Handheld PC powered by Windows CE 2.0. A 15-day trial version is available for download.

Price: \$14.95
Use with H/PCs
Contact: PhatWare Corp.
Phone: 650-299-0110; Fax: 650-299-1369
Email: sales@phatware.com
Web: www.phatware.com/

Launch Force v. 1.0 beta 2

A tray icon utility, that can be configured to store as many as 10 frequently used applications. On tapping the tray icon, a pane appears with the respective icons of these 10 applications. Tapping on any of these icons launches that application. Users can also configure hot keys to each application.

Use with H/PC with Windows CE 1.0 and 2.0
Contact: Ruksun Software Technologies
Phone: +91 212 678286 or +91 212 678288
Fax: +91 212 678866
Email: info@ruksun.com
Web: www.ruksun.com/wince/

Palm Presenter

Application that lets you control a desktop PC's PowerPoint presentation for a Palm-size PC. The application has two parts — a PowerPoint'97 add-in for your Windows 95/98 computer, and the Palm Presenter application on your Palm-size PC. Connect your Palm-size PC to your desktop/notebook PC via a 5 meter serial cable included with the package. Use the Palm-size PC to advance, back up, or randomly jump to anywhere in your presentation. Wireless version available soon.

Price: \$69
Use with Palm-size PC
Contact: EZShow Systems Inc (Canada)
Phone: 604-299-2033; Fax: 604-299-5118
Email: mike@ezshow.com
Web: www.ezshow.com

PocketSwap

A utility for managing and automatically

changing multiple desktop wallpaper bitmaps. PocketSwap takes all of your space consuming wallpaper bitmaps and compresses them into a single spot where it then selects one at a time to be decompressed and used as the desktop wallpaper at user defined intervals.

Shareware

Contact: Grundle Software
Email: info@grundlesoftware.com

Web: www.grundlesoftware.com/wince.htm

Screen Saver Engine and Funky Spheres Screen Saver

A utility with a collection of screen savers for color Handheld PCs powered by Windows CE 2.0. Designed to be run when the device is NOT on battery power, the screen saver software is useful by displaying pleasing patterns when a Handheld PC is left plugged in and running for long periods of time. A demo version is available for download.

Funky Spheres lets you add seven different kinds of spheres, each of which warps your screen in a different way. You can also choose the size and speed for each sphere which allows you to customize this screen saver as much or as little as you like. Must be used with the Screen Saver Engine described above.

Screen Saver Engine: \$10

Funky Spheres: \$10

Use with H/PC

Contact: Xoanan Industries

Web: www.xoanan.com

SpaceWatch 1.12

A freeware utility for choosing and scanning a directory to determine the number of files and subdirectories, total storage space used, information on the five largest files, and other storage usage statistics.

Freeware

Contact: Windows CE Conservatory

Web: web.singnet.com.sg/~cheekeat/wince/

SoundWidget

A utility that allows you to adjust your sound volume by clicking on the tray speaker icon. Allows much greater control over the volume (not just five settings like the internal Windows CE sound applet)

Freeware

Contact: Grundle Software

Email: info@grundlesoftware.com

Web: www.grundlesoftware.com/wince.htm

Storage Card Applet

Control panel applet for Windows CE 1.0

and Windows CE 2.0 that shows information about your storage card's total available and total free space. This is a free utility for registered users of SpaceHogCE.

Shareware

Contact: Grundle Software
Email: info@grundlesoftware.com
Web: www.grundlesoftware.com/wince.htm

SysInfo Browser

Displays information about your device, including over 100 parameters of interest to users and H/PC developers.

Price: \$9.95

Demo version available for download at website

Use with H/PCs

Contact: The Web Mill

Phone: 415-898-4877

Email: clubce@webmill.com

Web: www.webmill.com/ce

VersADay

Displays verses related to a given subject in the Notes box on your H/PC sign on screen. The note is updated several times a day, giving you a fresh note almost every time you turn on your handheld.

Price: \$19.95

Trial version available for download at website

Use with H/PCs

Contact: The Web Mill

Phone: 415-898-4877

Email: clubce@webmill.com

Web: www.webmill.com/ce

XT-CE

An 80186 PC emulator for the Handheld PC powered by Windows CE. The software enables installation of versions of MS-DOS up to 6.22 and Caldera OpenDOS, with emulation for CGA displays, PC hardware, COM ports, mouse drivers, and more. Currently XT-CE requires at least a 75Mhz processor to emulate an 8Mhz XT. System Requirements: An Hitachi SH or MIPS based H/PC with at least 512Kb free program memory, and the Windows CE 1.0 or 2.0 operating system. A bootable DOS (or compatible) diskette and a desktop PC running H/PC Explorer with a diskette drive to create a disk image of the bootable DOS (or compatible) diskette. Recommended: An 80Mhz or greater Hitachi SH or MIPS based H/PC with 2Mb free program memory, and the Windows CE 2.0 operating system. It supports color and all current H/PC models.

Demo version is available for download.

Use with H/PCs

Web: www.pyram-id.demon.co.uk/XTCE.html

Utility/Communication

Net Force v1.5

A set of Internet Utilities for the H/PC, especially useful to Network Administrators. Includes "Finger" to look up users on a remote machine, "WHOIS" to provide netwide directory service to Internet users and "NS Lookup" for querying Domain Name Servers (DNS) for information about other servers.

Price: \$9.95

Use with H/PC

Contact: MobileSoft

Web: www.mobilesoft.com

Developer: Ruksun Software Technologies, Ltd.

Phone: +91 212 678286 or +91 212 678288

Fax: +91-212-678866

Email: info@ruksun.com

Web: www.ruksun.com/wince/

Publication

MobilePlanet Windows CE products catalog

A on-line and hard-copy catalog for

Creative Digital Publishing presents

The Handheld Computer Almanac

2nd Edition

The definitive guide to products and services for the handheld computer industry.

- 750 companies, 1800 products
- 50+ categories
- 140+ pages of descriptions
- Detailed indices by company, product, and platform

The Handheld Computer Almanac costs \$19.95 plus shipping and handling.

www.cdpubs.com

415.621.4252

mobile computer users. The Windows CE section of the catalog offers H/PCs and accessories from the manufacturers of Windows CE devices. The catalog also offers Windows CE software and accessories from a number of third-party vendors.

Contact: MobilePlanet
Phone: 800-MPLANET (675-2698); Fax: 818-888-3484
Web: www.mplanet.com

Auto PC/Hardware

Telcar Mark V

Telcar Mark V is a hands-free speakerphone system designed to enhance the performance of the Clarion Auto PC. Telcar Mark V interfaces a personal cellular phone to the Auto PC voice recognition and speaker systems. Telcar Mark V automatically mutes entertainment functions when initializing or receiving phone calls, converting the Auto PC into a high quality speakerphone. Use verbal commands to dial stored phone numbers from the Address Book. Telcar Mark V includes a modem to enable connection to e-mail, World Wide Web, and emergency monitoring systems. Combined with GPS (Global Positioning System), Telcar Mark V dials phone numbers for Points of Interest generated by the Auto PC GPS software. Available wherever Clarion Auto PC is sold.

Price: \$250
Contact: ORA Electronics, Inc.
Phone: 818-772-2700; Fax: 818-718-8626
Email: webmaster@orausa.com
Web: www.orausa.com

Windows CE
HANDHELD PC
MAGAZINE www.thaddeus.com

Join us online at
www.thaddeus.com

Products and Services for Windows CE Developers

Hardware

Wireless

WaveLAN Wireless LAN PC Card for OEM developers

For systems designers and developers who desire a small IEEE 802.11-compliant wireless LAN adapter for mobile computer platforms, including Windows CE 2.0 devices. The PC Card provides 2 Mbps throughput and includes radio and controller and two standard antenna options.

Contact: Lucent Technologies
Phone: 800-WaveLAN
Web: www.wavelan.com

Software

CodeWarrior for Windows CE

CodeWarrior for Windows CE will support C and C++ and will be hosted on Windows 95 and Windows NT. Each product will support Microsoft Windows CE 2.0 and provide integrated source-level two-machine debugging and simulation debugging. The Windows CE 2.0 SDK and DDK libraries will also be included.

Price: \$399
(Includes one free update and technical support for a year from Metrowerks Site.)
License pricing will also be available by contacting Metrowerks at 800-377-5416, or by sending a request to: sales@metrowerks.com.
For pricing and availability outside the USA, contact a local international distributor or call 512-873-4700.
Web: www.metrowerks.com

HPC Connect

An ActiveX control that allows you to build custom applications that interact and exchange data with Windows CE devices.

Price: \$129.00
Contact: Mobilesoft
Web: www.mobilesoft.com

Developer: HPC Technology
Fax: 617-277-4967

JetForm Filler 2.5 for Microsoft Windows CE

JetForm Filler on the Microsoft Windows CE platform provides data capture capability for intelligent electronic forms created with JetForm Design. When away from the office, Windows CE users can perform data capture and then transfer their data via e-mail, infrared, modem, or serial cable to their host computer. These completed data files can then be automatically processed with JetForm Filler Pro or JetForm Central. Some new enhancements to JetForm Filler CE include: Form and data transfer via e-mail,

compatible with JetForm Central, support for JetForm string functions, and many more form filling features.

Price: \$99
Use with: H/PC and Palm-size PCs
Contact: Joey Technologies (JetForm Master VAR)
Phone: 813-822-JOEY (5639)
Fax: 813-823-0456
Email: sales@joeytech.com
Web: www.joeytech.com

MobileApps

Application development tool for Microsoft Windows CE 2.0 with visual GUI builder, database access and synchronization. Developers can visually construct their application and let MobileApps create the C++/MFCC code, including access to ODBC compliant remote databases.

Price: Contact vendor
Contact: TechBridge Technology Corp.
Phone: 905-513-7800; Fax: 905-513-1330
Email: aho@tbridge.com
Web: www.tbridge.com
Contact: River Run Software Group
Phone: 203-861-0090; Fax: 203-861-0096
Email: trilok_manocha@riverrun.com
Web: www.riverrun.com

RDM/CE developer's database engine

RDM/CE is an embeddable and customizable database engine for application development on Windows CE. RDM/CE consists of a compact embedded DB along with development utilities and a comprehensive library of low-level C functions for complete database manipulation and control.

Price: To be announced
Contact: Raima Corporation
Phone: 206-515-9477; Fax: 206-748-5200
Email: sales@raima.com
Web: www.raima.com

RdPC for Windows CE

RdPC technology lets designers of Windows CE embedded systems turn their device into a zero administration "black box" hardware server. RdPC enables Win32-based access from remote Windows stations, embedded platform resources browsing, secured access to embedded platform devices, and more.

Contact: Goman, Ltd.
Phone: +972-3-9024725; Fax: +972-3-9024727
Email: info@goman.co.il
Web: www.goman.co.il

RoboHELP 6.0

Turns Microsoft Word into a full-featured Help-file authoring tool. Lets developers quickly generate compact Help files for their Windows CE applications and eight other industry standard Help formats. The additional formats supported by RoboHELP include WinHelp 3 and 4, the new Windows 98 and NT 5 Help format (Microsoft HTML Help), the new

Products and Services for Windows CE Developers

cross-platform and browser independent WebHelp, Netscape NetHelp 1.0 and 2.0, Internet/Intranet Web sites, and printed documentation.

Price: \$499

*Included in RoboHELP Office 6.0 — \$699
(after a \$100 manufacturer's mail-in rebate).*

Contact: Blue Sky Software

Phone: 800-459-2356 or 619-459-6365

Fax: 619-459-6366

Email: info@blue-sky.com

Web: www.blue-sky.com

Spyglass: System Integrator for Windows CE

Spyglass provides custom development and software integration services for the Windows CE environment. Spyglass is already actively engaged in a number of related projects for Windows CE, including its Mobile Forms Database. Spyglass is experienced with the Internet, advanced television, and development of Windows CE-based applications on handheld computers. Spyglass has also developed Prism, a server-based content conversion solution designed to optimize the performance of the new generation of Web-enabled devices, including Windows CE PC Companions.

Contact: Spyglass

Phone: 408-399-8800; Fax: 408-399-4395

Web: www.spyglass.com

Win2Go Database Companion

Enables Windows CE-based Handheld PCs to work with data from all leading PC and server-based database systems. Lets you create databases for your pen computer using common tools like Microsoft Access, and synchronize data with the PC or server-based data application. BackOffice and Windows CE 2.0 versions available.

Contact: Pica Information & Management

GmbH, WinLinX Team

Phone: +49 89 89 525 130

Fax: +49 89 89 525 139

Email: winlinx@pica.de

Web: www.pica.de/win2go

Services

Auctor development services

A Microsoft Windows CE Authorized Systems Integrator offering Windows CE developers expertise in turnkey system design, hardware & software system integration, system & I/O controller chip design and project management.

Contact: Auctor Corporation

Phone: 408-980-0622; Fax: 408-980-0626

Email: marketing@auctorcorp.com

Auctor Taiwan, Inc.

Phone: +886 2 2719 9076; Fax: +886 2 2514 9127

Email: acctwn@ptis1.seed.net.tw

Award Software

Provides system integration for developers of Windows CE platforms. Assists product designers with their software development needs, including the

Windows CE OEM Adaptation Layer (OAL) software, interface software, host and driver software for USB and IEEE-1394, and services for Win32 application migration and development.

Contact: Award Software

Phone: 650-237-6842

Email: rod@award.com

EZOS

EZOS offers Windows CE training classes for people who need to develop an embedded solution based on Windows CE or to understand the details of the Windows CE system. Each student will have a Windows CE development system. Topics covered are: Architecture, SDK & Development Tools, Developing your Application, CE Internals, EDK for Windows CE, Developing Device Driver.

Price: 57.000 BEF/ 1.700 USD - 3 days

Contact: EZOS s.a. BELGIUM

Phone: +32 2 387 20 00

Fax: +32 2 387 20 10

Email: registration@ezos.com

Web: www.ezos.com/Staff/bhu/bhuCEshareware.asp

VenturCom Component Integrator and RTX

Component Integrator is a tool for engineering and deploying Windows CE products that helps the developer manage complex CE target configurations. RTX is a common hard real-time development environment for Windows CE (and Windows NT) that delivers deterministic response characteristics for complex control applications.

Contact: VenturCom, Inc.

Phone: 800-334-8649

Web: www.vci.com

Windows CE Developers Seminar

Designed to assist the experienced Win32 programmer in writing applications for Windows CE. Teaches you how to write directly to the Windows CE API and covers how Windows CE differs from the standard Win32 API seen on Windows NT/95/98. Discusses why some Windows CE functions act differently from their Windows NT/95/98 counterparts. Conducted by Douglas Boling, Contributing Editor to PC Magazine, Microsoft Interactive Developer and author of upcoming Microsoft Press book, "Programming Windows CE."

Public and on-site classes available.

Contact: David Solomon Expert Seminars

Mark Stevens

Phone: 800-492-4898

Web: www.solsem.com

Windows CE Programmer Training

Five-day, open enrollment lecture and lab based workshops for C and C++ programmers. These workshops provide in-depth, accurate information on how to build small, fast, robust Win32 applications. The workshops are developed by Paul Yao, co-author of five books on Windows programming. Mr. Yao has ten years experience in teaching programmers the ins and outs of the Windows API.

First-time Windows programmers can sign up for Principles of Programming for Windows CE. This

workshop covers Windows' basic paradigms: event-driven programming, creating graphical output, and building a user-interface.

August 3-7, 1998

Experienced Win32 programmers need the Advanced System Services Programming for Windows CE, which covers core kernel-level features like Windows CE processes & threads, dynamic link libraries, sockets, COM fundamentals and much more.

September 14-18, 1998

Principles of Programming for Windows CE:

Open enrollment classes: \$2575

On-site classes (minimum 10 participants): \$2075 each

Advanced System Services Programming for Windows CE:

Open enrollment classes: \$2975

On-site classes (minimum 10 participants): \$2475 each

Contact: The Paul Yao Company

Phone: 425-747-1355; Fax: 425-828-6312

Email: 76111.232@compuserve.com

Web: www.paulyyao.com

Event

Embedded Systems Conference

November 1-5, 1998. San Jose Convention Center, San Jose, CA. Conference and trade show for embedded systems professionals. A variety of topics covered, including Windows CE, Java, C/C++, project management, and RTOSs. Thousands of embedded systems products, software tools and services displayed.

Contact: Embedded Systems Conference

Phone: 888-239-5563 or 415-538-3848

Fax: 415-278-5390

Email: esc@mfi.com

Web: www.embedded.com/esc.htm

Utility Industry Handheld & PDA Forum '98

August 19-21 in Denver, CO.

A "strategic meeting of the minds" focusing on field automation problems facing the utility industry. Features case study presentations and discussions led by major utility company end users, manufacturers and suppliers of this technology. The Forum is designed for utility industry executives and project managers responsible for implementing handheld/mobile/wireless data computing technology solutions as part of the enterprise-wide information technology strategy. [Editor's Note: At this time I am unsure how much Windows CE specific information is in the Forum.]

Contact: Drew Blakeman

Phone: 415-641-2450; Fax: 415-641-2455

Email: drew@wmsltd.com

Web: www.pda-expo.com

Publication

Microsoft Systems Journal

A monthly magazine for Windows developers published by Miller Freeman in conjunction with

Products and Services for Windows CE Developers

Microsoft. Contains articles on development issues relating to Windows NT, Windows 95/98 and Windows CE.

*Single issue, newsstand (US): \$4.95
One year subscription (US): \$50
One year subscription (Canada/Mexico): \$65
One year subscription (International): \$70
Contact: Microsoft Systems Journal
P.O. Box 8024, Boulder CO 80306-8024
Phone: 800-666-1084 (Customer Service)
Fax: 303-661-1885
Web: www.msj.com*

Three Windows CE Developers Books from Microsoft Press

Microsoft Windows CE Programmer's Guide

Microsoft's official printed documentation showing C/C++ programmers familiar with the Win32 API how to build, debug and run applications for Windows CE on desktop systems without the need for Windows CE. Includes a CD-ROM with a searchable version of the Windows CE Win32 Reference, a guide to the Microsoft Visual C++ 5.0 emulation environment and tools, the Microsoft Foundation Class reference, and other tools. (850 pages with one CD-ROM, ISBN: 1-57231-643-8, UPC: 790145164384). Price (US): \$49.99

Inside Microsoft Windows CE

Presents conceptual frameworks that help developers understand design options and pick and choose the smallest set of needed OS modules to use memory efficiently. Includes a series of real-world case studies to demonstrate Windows CE flexibility. (225 pages, ISBN: 1-57231-854-6; UPC: 790145185464). Available Summer 1998. Price (US): \$24.99

Programming Windows CE

Covers the new Win32 API supported by Windows CE as well as workarounds for Win32 APIs not supported. Also covers programming techniques for memory-constrained environments. MFC for Windows CE is discussed, but the primary focus is the Windows CE API. (550 pages with one CD-ROM, ISBN: 1-57231-856-2, UPC: 790145185624). Available Fall 1998. Price (US): \$44.99

Contact: Microsoft Press
Phone (USA): 800-MSPRESS; (Canada): 800-268-2222
Fax (USA): 800-826-5399; (Canada): 800-430-4445
Web: www.mspress.microsoft.com

Windows CE Tech Journal

Publication for developers of Windows CE products and services. Articles will focus on application development, operating system development, third party tools and technologies, and Windows CE characteristics. According to the Editor-In-Chief, John Choisser, "Windows CE Tech Journal will concentrate on ...helping developers find the information they need to get their job done easier and faster."

Price (US): \$free (controlled circulation)

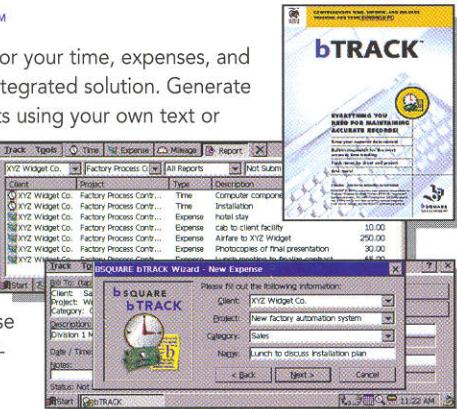
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PRODUCT REVIEWS

Fiscal Pro

Advanced Financial Problem Solver

By Bil Alvernaz

LandWare touts Fiscal Pro as an "advanced financial problem solver for Windows CE." They should have included "simple and easy to use." Fiscal Pro is a "forms-based financial problem solver." That means that all of its applications are presented as simple forms. Plug in the numbers and Fiscal Pro pops out the answer. It's a snap.

Tap on Fiscal Pro's Applications menu and a drop-down list shows you the different forms available. You've got Time Value of Money (TVM), Interest Conversions, Amortization, Cash Flows, Business %, Conversions, Date Calculations and a simple Calculator. Tap on the desired application and the form appears.

The layout of the forms and the tab key make it easy to fill in data. For example, Fiscal Pro's Amortization form lets you figure out the payments you'd make on a purchase over time. Fiscal Pro assumes you'll be making 12 payments per year. Hit tab and fill in the total Number of payments. Hit tab again and enter the Interest rate. Hit tab one more time and enter the Remaining balance. Fiscal Pro calculates the payment, interest portion and other useful information automatically.

The data fields are arranged in logical order and the tab and arrow keys take you from one to the other. Use the number keys to enter values and press the spacebar when you're ready to solve the formula. You don't need to remember any obscure keystrokes or

keyboard commands. You can focus more on "what if" calculations to get the information you need.

It's obvious that a lot of thought went into Fiscal Pro's built-in help feature. The purpose and functioning of each of Fiscal Pro's applications is described in a brief, but well-organized manner. Help gives you tips on using the applications and explains various concepts such as Time Value of Money, Irregular vs regular cash flows, Investment analysis, etc. Help also provides step by step examples for each calculation. Whenever you need help, you can get answers fast – it's a help feature you can actually use. Added support is provided in Fiscal Pro's user manual, a well-written document that provides over 50 calculation examples. Set up is so easy that you probably won't need the manual.

Fiscal Pro was designed from the ground up for the Windows CE platform. It's fast and uses only 90K of the H/PC's precious memory resources. It comes built-in on Hewlett-Packard's HP 620LX and an installable version is on the CD-ROM that comes with the HP 360LX. Users of other H/PCs can buy a commercial version that will run on any Windows CE 1.0 and 2.0 device. Localized versions are available in French, German, Italian, Portuguese, Spanish and Japanese.

Bil Alvernaz works as a consultant and writer for a wide variety of companies. He has written for USA Today, United Feature Syndicate, PC Magazine and other trade publications. Bil runs the Windows95/98 Forum on MSN. His email address is bil@alvernaz.com

Fiscal Pro — \$39.95. Also available bundled with LandWare's Financial Consultant program for \$49.95. **CONTACT:** LandWare, Inc. Phone: 201-261-7944; Fax: 201-261-7949; Web: www.landware.com

vxHPC

High-quality Terminal Emulation

By Don Hergert

72235.32@compuserve.com

I'm a heavy communications user and my primary use for Windows CE is communication related. Windows CE 1.0 and its incomplete terminal emulation capabilities almost pushed me into giving up on it altogether. Windows CE 2.0 has enticed me back with great enthusiasm. Not because the Terminal program has improved – it hasn't. But because high-quality emulation packages from independent software developers have begun to hit the market.

The one that I'm using is vxHPC from Cambridge Computing Corp. It's the only one that is Windows CE 2.0 compatible at the time of the writing of this article. It lets you connect your H/PC to BBS's, Digital, Unix, Wang and Internet host systems. vxHPC supports IrDA, serial port, modem, and TCP/IP connections and all the normal Windows CE dialing functions, plus it provides login scripting (unfortunately not for Remote Networking connections), printing, a print log mode, print capture, text capture, copy, paste, multi-protocoll upload and download, a nice variety of fonts, a very well done group of emulations, and the ability to connect using a Remote Networking connection in a Telnet mode (although be aware that this mode of connecting to a system like CSi over the Internet is unsecured).

vxHPC is a well done, feature rich, and reliable product. In my mind it's what Windows CE's native Terminal program should have been. It works nicely with CSi's remaining text-based forum and information services, as well as with CSi's "old-mail" system.

vxHPC — Price: \$29.95 (Free demo at website)
CONTACT: Cambridge Computer Corp.
Phone: 800-462-4481; Fax: 203-288-0009;
Web: www.cam.com/vxhpc.html



Shopping OnLine for Windows CE software and accessories

By Tom Gibson

Technical Editor, Handheld PC Magazine

Email: tom_gibson@thaddeus.com Web site: www.thaddeus.com

If you have been looking through your local software store for Windows CE titles, chances are the pickings have been mighty slim. With the ease and security that the Internet is offering today, and the low cost of using it to reach millions of consumers, many software vendors are opting to cut out the cost and hassle of distribution by making their titles available on line, at one of the new "virtual" software stores on the Internet.

You'll still find Windows 95/98 and Windows NT software available in "non-virtual" stores. Part of the reason for this is the sheer size of the software. It would be very inconvenient to attempt to download 190 MB of files from the Internet. Even some of the popular graphics-intensive video games available today are over 30 MB. Contrast this with a typical Windows CE application which, in most cases, is under 3 MB, and you begin to see why virtual software stores are popular for Windows CE software.

Better for the customer

As mentioned, virtual cut software costs dramatically, for both

the consumer and the software developer/reseller. Time is money, and buying software from a real store involves getting into the car, driving to the store, parking, walking around trying to find the software, waiting in a checkout line wondering whether you've got the best price or maybe you should go over to CompUSA and check out their price, and so on. Instead, from the comfort of your home or office, you can go up on the Internet and quickly check the sites where Windows CE titles are available. You can do your comparison shopping, make a secure transaction for your purchase and either download the software immediately, wait for the product to be shipped to you, or a combination of the two.

Better for the developer and reseller

Virtual stores provide a lot of advantages to the software developer. He doesn't have to spend a lot of time finding stores to sell his titles, or fight with the reseller for prime space on the shelves. Some sites will sell advertising space in prime locations, such as the opening pages of the site, but for the most part titles are on pretty much of

a level playing field. Description and requirements of the software are readily available to the consumer with the click of a mouse button.

The reseller doesn't have to have a lot of knowledgeable clerks available to assist you with your purchase. Most sites provide links back to the developer for that. The reseller doesn't have to invest a lot of resources stocking products in all 500 outlets of his store. In fact, he doesn't have to have 500 outlets, which means he saves a whole lot on rent and utilities. He can afford to carry a wider variety of products, including carrying cases, PC Card devices, and cables. In fact, some virtual stores even sell H/PCs and Palm-size PCs.

Everything's "Virtual"

Most virtual stores and malls use virtual shopping cart systems. You browse the virtual shelves and when you find a product you want, click on a "Buy" button, enter the quantity you want, and "put it into your shopping cart." When you're finished shopping, you proceed to the virtual checkout where you confirm the items in your shopping cart and the prices you will be charged. You can change your mind and take items out of the shopping cart, or discard the whole cart.

When you're ready buy, you click the "purchase" button. You're asked for your name, address, phone, fax, email, etc. Normally, you don't have to fill out all of the fields if you don't want to. You're then asked for your credit card information, which is transmitted in a secure manner that can only be read by the intended recipient. The card is checked (as it is in any store) and you receive a virtual "thank you" from the virtual clerk. In addition, an email confirmation of your order is sent. If the product is downloadable from the site, you're then able to have it sent directly to your computer. Otherwise, it's shipped to the address you give.

With the exception of Windows CE users that are not yet able to access the Internet, all parties are served by the virtual store. Here are some of the virtual stores available today on the Internet for Windows CE software. For those without Internet access, MobilePlanet, mentioned below, has an old-fashion paper catalog it will send you.

MobilePlanet—www.mobileplanet.com

MobilePlanet has Windows CE Central for your software needs. They offer Handheld PCs from 7 manufacturers and Palm-size PCs from 3 manufacturers. There are also hardware add-ons and accessories, including books about Windows CE, care and maintenance products, carrying cases, connectivity products, data collection, Ethernet cards, GPS devices, styluses, memory cards and much more. There were about 40 software titles available the last time I visited. Titles are available from Microsoft, OEMs and independent vendors, and range from GPS (Global Positioning System) software to database applications to games and much more. MobilePlanet also has a tips and tricks section for you and you can get their catalog.

MobilePlanet uses a shopping cart system for safe and secure transaction processing. It's a fairly nice site with a wide variety of products available. You can contact them to get a "non-virtual" version of their catalog mailed to you. Phone: 800-675-2638 or 818-888-7267; Fax 1-818-888-3484; Email sales@mplanet.com.

MobileSoft — www.mobilesoft.com

While MobilePlanet simply lists the title and developer on their catalog's main pages, MobileSoft gives you a description, price and what version of Windows CE the software will work on. There were over 100 software titles at MobileSoft when I last visited the site. MobileSoft specializes in software for the PC Companions and doesn't carry a lot of other extras. They have a Smart Shopper that will

help you find the correct piece of software for your needs based upon your criteria and input.

MobileSoft uses a shopping cart system and features Electronic Software Delivery so that you can download the software after you have purchased it. MobileSoft is a very user-friendly site with tons of software for your PC Companion.

CEMonster — www.pdacentral.com/ad.html and www.cemonster.com/index.html

CEMonster is a section of PDACentral, which is brought to us by TUCOWS. I have to rank TUCOWS as one of my top 3 Internet sites for Windows 3.X/95/NT freeware/shareware. PDACentral is beginning to rank pretty high for the PDA and Windows CE market. The suite is easy to use and well-categorized, with hot links to the different categories on each page. PDACentral has the PilotZone for users of the Palm Pilot, Newtonville for users of the Apple Newton, CEMonster for Windows CE and PsionKing for Psion users.

The categories in CEMonster include: Accessories, Action Games, Board Games, Compression, Calculators, Chat, Dialers, Fax Applications, Development, Handwriting, Information Managers, Internet Tools, Mail, Notepads, Time, Utilities and What's New. Each category has the latest freeware/shareware available. A description of each piece of software is included, along with information about the Version Number, Revision Date, File Name, Byte Size, License information (freeware, shareware, commercial demo), Homepage (of the developer), and O/S Compatibility. Click the "Download Now" link and CEMonster walks you through the process. This is definitely a must visit site.

Buyonet — www.buyonet.com

Buyonet is a newcomer to the virtual marketplace for Windows CE. There were only a few titles available when I visited, but the Windows CE section had only been open a week or so at that time. Buyonet has products for many platforms other than Windows CE. It does not use a shopping cart system, which makes things a little tricky. When you find a product you want, you click on that product and are transported to a secure location where you enter your information. Some of the products you download first, make sure the file is intact, then pay and receive a key to unlock the software for use. Others you pay before downloading. It seemed quite complicated trying to figure out which was which. Each time you find a product you like, you have to stop, go to the secure location, and download it before you go back to browsing.

These are some of the places you can find Windows CE software and products. If you are looking for software for your PC Companion, give these sites a try. Be sure and tell them what you like (or don't like), products you'd like to see, etc. That will help improve them for all of us.

Until next issue, I'll see you OnLine! ■

PC Companions At A Glance

Handheld PCs

CASIO

CONTACT your local Casio dealer or Casio, Inc.; Phone (USA): 201-361-5400; Fax: 201-361-3819; Web: www.casio.hpc.com



Casio CASSIOPEIA A-20 — \$599.95

HARDWARE: 80 MHz Hitachi SH-3 CPU; 8 MB RAM; 640 x 240 backlit display with 4 shades of gray; QWERTY keyboard, serial port, IrDA infrared port; Type II PC Card slot; CompactFlash Card slot; built-in microphone and speaker; two AA Alkaline batteries; backup battery; AC adapter; user guides; CD ROM with sample software.

BUILT-IN SOFTWARE: Microsoft Windows CE 2.0 operating system, accessories and "Pocket" applications. Software on disk or CD ROM: QuickNotes; pcANYWHERE CD; E-Mail Access; Financial Consultant Calculator; bFAX Pro; IntelliSync; Socket Connectivity product; PageSoft Pro; GTE Personal Sender; Tetris; Casio QV-Link; Casio Project Scheduler; Casio Paint-Atlas; Casio Sound-Vega voice memo; Casio Voice Applications voice command; Casio Teleconferencing Software; Casio Easy File Tool; Financial Consultant Calculator;

ACCESSORIES: PC Docking Cradle; AC adapter; Rechargeable Battery Pack; Windows CE 2.0 upgrade kit for CASSIOPEIA A-11 and A-11+.

COMPAQ

CONTACT your local Compaq dealer or Compact Direct Plus; Phone (USA): 800-888-5858; Web: www.compaq.com



Compaq C-Series 2010 c (color screen) — \$899

Compaq C-Series 810 (gray-scale screen) — \$599

HARDWARE: 75MHz MIPS RISC CPU, 16MB ROM, 8MB or 20MB RAM (expandable to 20 or 32 MB), 640 x 240 mono or color touch sensitive screen;

integrated 33.6 modem (optional in some countries); Type II PC Card slot; powered by two Alkaline AA batteries (Mono) or NiMH rechargeable battery pack (standard on model 2010c) or A/C adapter (included); serial cable; user guides; CD ROM with sample software.

BUILT-IN SOFTWARE: Microsoft Windows CE 2.0 operating system, accessories and "Pocket" applications. Software on disk or CD ROM: not announced.

ACCESSORIES: Battery pack; Cradle; Auto sync Cable; Stylus 3-Pack; 16MB Ram Expansion; Auto Adapter; Carrying Case; Slip Case; Portfolio Case; AC Adapter; VGA PC Card.

ERICSSON

CONTACT: Ericsson Mobile Communications; Web: mobile.ericsson.se



Ericsson Mobile Communications MC16 — \$NA

HARDWARE: Based on Hewlett-Packard's HP 360LX (see HP section for details). Other features include: Built-in infrared modem lets you communicate with an Ericsson cellular phone to; send and receive faxes, e-mails, browse the Web; send quick SMS messages to mobile phones and fax machines; synchronize the phone book with your Ericsson phone.

BUILT-IN SOFTWARE: Microsoft Windows CE 2.0 operating system, accessories, and "Pocket" applications. Information about additional software not available.

ACCESSORIES: Information about specific MC16 accessories not available, but they should be similar to the HP 360LX's accessories. The MC16 is compatible with the following Ericsson mobile phones (model numbers): GF 788, GF 768, GH 688, GA 628, GH 398, GH 388, GF 388, GA 318, PF 768, PH 388, CF 788, CH 388, CF 388, CA 318.

HEWLETT-PACKARD

CONTACT your local HP dealer or Hewlett-Packard Company; Phone (USA): 800-443-1254; Web: www.hp.com/handheld



HP 620LX Palmtop PC — \$899

HARDWARE: 75 MHz CPU; 16 MB RAM; 640x240-pixel 256 color screen with "natural white" backlighting; QWERTY keyboard; serial port; IrDA infrared port; Type II PC Card slot; CompactFlash Card slot; Lithium-Ion rechargeable battery pack; 3V CR2032 coin cell backup battery; microphone and audio speaker; synchronization cable; docking cradle; AC adapter; user guides; CD ROM with sample software.

BUILT-IN SOFTWARE: Microsoft Windows CE 2.0 operating system, accessories and "Pocket" applications; bFAX; bFIND; Financial software; Remote Networking and Terminal Application software; Calendar viewing utilities. Software on disk or CD ROM: H/PC Explorer version 2.0; Translation software to convert HP 100/200LX & OmniGo 100/120 appointment/ phone books to H/PC formats; Trial software from independent software vendors.

ACCESSORIES: HP CompactFlash Memory plus PC Card slot adapter: 4MB - \$89, 10MB - \$149; Spare Cradle - \$29.99; External Battery Charger - \$79; Pack of 3 pens - \$9.99; VGA Out PC Card - \$119; Standard Li-Ion Battery Pack - \$69; Extended Li-Ion Battery pack - \$119; Sync Cable - \$14.99; Leather Case - \$69.00.



HP 360LX Palmtop PC — \$599

HARDWARE: 60 MHz CPU; 8 MB RAM; 640x240 monochrome screen with "natural-white" backlighting; QWERTY keyboard; serial port; IrDA infrared port; Type II PC Card slot; CompactFlash Card; 3V CR2032 coin cell backup battery; user guides; CD ROM with sample software.

BUILT-IN SOFTWARE: Microsoft Windows CE 2.0 operating system, accessories and "Pocket" applications; bFAX; bFIND; Financial software; Remote Networking and Terminal Application software; Calendar viewing utilities. Software on disk or CD ROM: H/PC Explorer version 2.0; Translation software to convert HP 100/200LX & OmniGo 100/120 appointment/ phone books to H/PC formats; Trial software from independent software vendors.

ACCESSORIES: HP CompactFlash Memory plus PC Card slot adapter (see 620 LX accessories); Sync Cable - \$14.99; Spare Cradle - \$29.99; Pack of 3 pens - \$9.99; Leather Case - \$69.00.

HP 320LX Palmtop PC - Discontinued

HITACHI

CONTACT your local Hitachi dealer or Hitachi Home Electronics; Phone (USA): 800-HITACHI; Web: www.hitachi-ce.com



Hitachi HPW-200EC Handheld PC — \$899

HARDWARE: 100 MHz Hitachi SuperH SH3 CPU; 16 MB RAM (expandable to 32MB); 12 MB ROM; 8.1" diagonal 640 x 240 touch screen; 256 color LCD display; large touch-typeable 74-key keyboard; 33.6 kbps built-in software modem; VGA-out port and IrDA interface; Type II PCMCIA slot; Compact Flash card slot; rechargeable Lithium-Ion battery pack; hot start program launch keys; built-in microphone, speaker and voice recorder; weighs less than 2 lbs with battery pack.

BUILT-IN SOFTWARE: Microsoft Windows CE 2.0 operating system, accessories, and "Pocket" applications. Software on disk or CD ROM: not announced.

ACCESSORIES: AC Adapter; Serial Cable; Docking Cradle; Lithium-Ion Battery Pack.

Hitachi HPW-20E8M Handheld PC — \$599

HARDWARE: 80 MHz Hitachi SuperH SH3 CPU; 8 MB RAM; 16 MB ROM; 7.1" diagonal 640 x 240 touch screen; 16 gray-scale LCD display; 69-key QWERTY keyboard; 21.6 kbps internal software modem; VGA-out port and IrDA interface; Type II PCMCIA slot; Compact Flash card slot; rechargeable Ni-MH battery pack; quick launch keys; built-in microphone, speaker and voice recorder; weighs approximately 1 lb.

BUILT-IN SOFTWARE: Microsoft Windows CE 2.0 operating system, accessories, and "Pocket" applications. Software on disk or CD ROM: not announced.

ACCESSORIES: AC Adapter; Serial Cable; Docking Cradle; Lithium-Ion Battery Pack

LG ELECTRONICS

CONTACT your local LGE dealer or LG Electronics Customer Information Center; Phone (USA): 800-243-0000; Web: www.lgphonem.com



LG Phenom Ultra — \$899

HARDWARE: 100MHz Hitachi SH3 CPU; 16MB RAM; 640x240-pixel backlit 256-color VGA display (8.8" diagonal screen); internal 33.6 Kbps modem; "large" QWERTY keyboard; VGA-out port; serial

port; IrDA infrared port, Type II PC Card slot; CompactFlash slot; voice memo capability; rechargeable Lithium-ion battery pack (10 hours of battery life, according to LGE).

BUILT-IN SOFTWARE: Microsoft Windows CE 2.0 operating system, accessories and "Pocket" applications. Software on disk or CD ROM: Windows CE Services, third-party software to be announced.

ACCESSORIES: All accessories are included.

capability; rechargeable battery pack; docking station; power adapter; user guides; CD ROM with third party software applications.

BUILT-IN SOFTWARE: Microsoft Windows CE 2.0 operating system, accessories and "Pocket" applications. Software on disk or CD ROM: not announced.

ACCESSORIES: LG Windows CE 2.0 upgrade.

NEC

CONTACT your local NEC dealer or NEC; Phone: (USA) 888-8-NEC-NOW. Web: www.neccsd.com/products/mobilepro/mobilepro.html



LG Phenom — \$499

(includes \$50 manufacturer rebate)

HARDWARE: 80 MHz SuperH RISC-Hitachi CPU; 8 MB RAM; 640x240-pixel backlit monochrome display; internal fax/modem; QWERTY keyboard; VGA out port with cable; serial port; IrDA infrared port; Type II PC Card slot; Compact Flash slot; voice memo



NEC MobilePro 750C — \$899

HARDWARE: 80 MHz NEC Vr4111 MIPS CPU; 16 MB RAM; 16 MB ROM; 640x480 backlit touch

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PC Companions... At A Glance

screen; 256 color LCD; large touch typeable keyboard; built-in 33.6 low-power hardware modem; VGA-out port; Type II PC Card slot; one CompactFlash slot; serial and IrDA ports; built-in microphone and speaker; QuickKeys program to launch applications; AC adapter; PC connectivity cable; RJ-11 modem cable; Lithium Ion rechargeable battery.

BUILT-IN SOFTWARE: Microsoft Windows CE 2.0 operating system, accessories, and "Pocket" applications. Software on disk or CD ROM: IntelliSync; PC ANYWHERE; Virtual Courier; QuickNotes; bFAX; bPRINT; E-Forms To Go.

ACCESSORIES: 16 MB Memory Upgrade; 32 MB Memory Upgrade; CompactFlash Card; Docking Cradle; Serial Cable; VGA Cable; Rechargeable Battery Pack; Battery Quick Charger (additional battery pack included); AC Adapter; Modem Cable; Stylus Pak; Carrying Case; Windows CE 2.0 Upgrade kit (for MobilePro 450 & 500).

NEC MobilePro 700 - \$599

HARDWARE: 54 MHz NEC Vr4102 MIPS CPU; 8 MB RAM; 16 MB ROM; 640x480 backlit touch screen; 4 gray scale LCD; large touch typeable keyboard; built-in 33.6 low-power hardware modem; VGA-out port; Type II PC Card slot; one CompactFlash slot; serial and IrDA ports; built-in microphone and speaker; QuickKeys program to launch applications; AC adapter; PC connectivity cable; RJ-11 modem cable; powered by two AA alkaline batteries (not included).

BUILT-IN SOFTWARE: Microsoft Windows CE 2.0 operating system, accessories, and "Pocket" applications. Software on disk or CD ROM: IntelliSync; PC ANYWHERE; Virtual Courier; QuickNotes; bFAX; bPRINT; E-Forms To Go.

ACCESSORIES: (see MobilePro 750 accessories).

NOVATEL WIRELESS

CONTACT Novatel Wireless; Phone (USA): 888-888-9231; Web: www.novatelwireless.com



Novatel CONTACT — \$TBA

HARDWARE: Hitachi SH3 RISC CPU; 8MB RAM expandable to 32 MB; 640 x 240 backlit touch screen; built-in 19.2 Kbps CDPD Wireless Modem (uses existing U.S. Cellular telephone networks) and an optional built-in 14.4 Kbps modem; IrDA port; Serial/VGA port, Type II PC Card slot; speaker, microphone; LEDs indicate communications status; powered by a 780 mAh Lithium-Ion Battery; Lithium backup battery and AC adapter.

BUILT-IN SOFTWARE: Microsoft Windows CE 2.0 operating system, accessories, and "Pocket" applications. Software on disk or CD ROM: not announced.

ACCESSORIES: All items included with unit can be purchased as accessories. In addition, the following are available: Serial/VGA cable; Leather Case; Data Cradle; DC Car power adapter.

PHILIPS

CONTACT Philips Mobile Computing Group; Phone (USA): 888-FOR-VELO; 408-558-2200; Fax: 408-558-2222; Web: www.velo1.com. U.S. retail outlets include: CDW, CompUSA Direct; Mobile Planet, PC Connect, and PC Zone.



Philips Velo 500 with 16 MB RAM — \$699

Philips Velo 500 with 24 MB RAM — \$799

HARDWARE: 75 MHz MIPS processor; 16 MB or 24 MB of internal RAM (expandable to 40 MB or 48 MB with an optional 32 MB DRAM Miniature Card); built-in low power 28.8 Kbps modem with 9600 Kbps fax; DRAM Miniature Card slot; Flash/ROM Miniature Card slot; 16 level grayscale monochrome screen capable of 480x240 or 640x240 pixel display; Velo Voice Memo system; built-in phone jack; phone cord; rechargeable NiMH battery pack; and docking station, connectivity cable, 9-to-25-pin adapter, AC Adapter.

BUILT-IN SOFTWARE: Microsoft Windows CE 2.0 operating system, accessories and "Pocket" applications. Software on disk or CD ROM: not announced.

ACCESSORIES: Velo 1 upgrade to Windows CE 2.0; 2 MB DRAM Card; 4 MB DRAM Card; 2 MB Flash Miniature Card; 4 MB Flash Miniature Card; Velo Docking Station; Velo Type II PC Card V-Module; Velo-to-PC Serial Cable; NiMH Rechargeable Battery Pack; Traveling AC Adapter; Carrying Case.

ton; CR2032 Lithium backup battery; PC Link serial cable; RJ-11 modular phone cable; and Stylus. The HC-4500 also comes with an AC adapter and NiMH rechargeable battery pack.

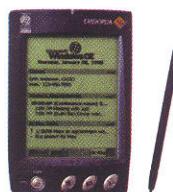
BUILT-IN SOFTWARE: Microsoft Windows CE 2.0 operating system, accessories and "Pocket" applications. Software on disk or CD ROM: bFAX Express; Voice Recorder; Image Editor; Sharp Zaurus Data Transfer; Microsoft Windows CE Services; IntelliMigrate; Microsoft Schedule+ 7.0a.

ACCESSORIES: Docking Station Kit (includes Docking Station, NiMH Rechargeable Battery Pack, AC adapter); NiMH Rechargeable Battery Pack; Digital Camera Card; AC Adapter.

Palm-Size PC

CASIO

CONTACT your local Casio dealer or Casio, Inc.; Phone (USA): 888-204-7765 or 973-361-5400; Web: www.casio.com



Cassiopeia E-10 Palm-size PC — \$399

HARDWARE: 100 MHz NEC VR4111 RISC processor; 4MB RAM; 8MB ROM; 320x240 touch-sensitive backlit display; CompactFlash slot; serial port, IrDA port, built-in voice record/playback capability. Weighs 5.5 oz (171 g); size 3.2 x 4.9 x .72 inches (8.13 x 12.45 x 1.83 cm), powered by 2 AAA batteries and a CR2016 backup battery. Comes with connectivity cradle, carrying case, manuals, and additional software.

BUILT-IN SOFTWARE: Microsoft Windows CE 2.0 operating system, accessories, and "Pocket" applications, including Pocket Outlook, Inbox, Mobile Channels and Notetaker. Software on disk or CD ROM: Microsoft Windows CE Services with ActiveSync.

ACCESSORIES: Connectivity cradle, carrying case, AC adapter, modem adapter; CompactFlash storage card.

EVEREX

CONTACT Everex Systems; Phone (USA): 888-PALMPC-4; Web: www.everex.com



Everex Freestyle Associate — \$329

Everex Freestyle Manager — \$399

Everex Freestyle Executive — \$499

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HARDWARE: Manager and Executive have a 66 MHz NEC VR 4111 CPU; Associate has a 54 MHz NEC VR4102 CPU; Manager and Executive have 8 MB RAM and 8 MB ROM; Associate has 4 MB RAM and 8 MB ROM. All units have a 320x240 backlit touchscreen; CompactFlash slot; serial and IrDA ports; and built-in voice record/playback capability. Weighs 5.29 oz (150g); size 4.8x3.18x0.64 inches (12.2x8.1x1.7 cm); Powered for up to 20 hours by 2 rechargeable NiMH AAA batteries; CR2032 backup battery (batteries included). Comes with connectivity cable, AC adapter, manuals and additional software. The Manager comes with a foldable MobileCradle for data sync. The Executive comes with a MobileCradle with a built-in 33.6 Kbps fax/modem.

BUILT-IN SOFTWARE: Microsoft Windows CE 2.0 operating system, accessories, and "Pocket" applications, including Pocket Outlook, Inbox, Mobile Channels and Notetaker. Software on disk or CD ROM: Microsoft Windows CE Services with

ActiveSync; bFAX Express, bTRACK, smARTwriter & smARTcommand, JOT.

ACCESSORIES: Docking station with integrated 33.6 modem; NiMH rechargeable battery; wireless paging card.

LG ELECTRONICS

CONTACT local LG dealer or LG Electronics Customer Information Center; Phone (USA): 800-243-0000; Web: www.lge.co.kr

LGE Pocket Phenom - \$To be announced

HARDWARE: SH3 processor; 320x240 touch-sensitive backlit display; CompactFlash slot; serial port, IrDA port, built-in voice record/playback capability. Powered by 2 AAA batteries, backup battery. Weight, size, and other details not yet available.

BUILT-IN SOFTWARE: Microsoft Windows CE 2.0 operating system, accessories, and "Pocket" applica-

tions, including Pocket Outlook, Inbox, Mobile Channels and Notetaker. Software on disk or CD ROM: Microsoft Windows CE Services with ActiveSync.

ACCESSORIES: Information not yet available.

PALMAX

CONTACT Palmax; Phone (in Taiwan): +886-2-2266007; Email: palmax@palmax.com.tw; Web: www.palmax.com.tw



Palmax PD-300 Palm-size PC — \$299

HARDWARE: 60 MHz SH3 processor; 2 MB RAM (expandable to 4 or 10 MB); 8MB ROM; 320x240 touch-sensitive backlit display; CompactFlash slot; serial port, IrDA port, built-in voice record/playback capability. Weighs 6.5 oz (184 g) size 4.9 x 3.2 x .8 inches (12.45 x 8.13 x 2.03 cm), powered by 2 AAA batteries and a CR1220 backup battery. Comes with connectivity cradle, AC adapter, manuals, and additional software.

BUILT-IN SOFTWARE: Microsoft Windows CE 2.0 operating system, accessories, and "Pocket" applications, including Pocket Outlook, Inbox, Mobile Channels and Notetaker. Software on disk or CD ROM: Microsoft Windows CE Services with ActiveSync

ACCESSORIES: NiMH rechargeable battery pack.

PHILIPS ELECTRONICS

CONTACT Philips Mobile Computing Group; Phone (USA): 888-367-8356 or 408-558-2200; Fax: 408-558-2222; Web: www.mobile.philips.com (then go to Nino Store).



Philips Nino 301 and 302 Palm-size PC — \$399.99/\$499.99

HARDWARE: 75 MHz MIPS R3900 processor; 4MB or 8MB RAM; 8MB ROM; 320x240 touch-sensitive backlit display with control dial; built-in low power 22.8 Kbps modem; CompactFlash slot; serial port, IrDA port, built-in voice record/playback capability. Weighs 7.33 oz (227 g); size 3.41 x 5.25 x .8 inches (8.66 x 13.34 x 2.03 cm). Four quick start buttons launch the most commonly used applications. The 301 is powered by 2 AA batteries and a CR2025 backup battery and comes with NinoDock connectivity cradle, carrying case, manuals, and additional software. In addition to the above, the Nino 302 also comes with a NiMB rechargeable battery. Either model can use the battery pack or AA batteries.

BUILT-IN SOFTWARE: Microsoft Windows CE 2.0

operating system, accessories, and "Pocket" applications, including Pocket Outlook, Inbox, Mobile Channels and Notetaker. Software on disk or CD ROM: Microsoft Windows CE Services with ActiveSync; T9 -- a utility that facilitates data entry by predicting words and character strings you enter; smARTwriter handwriting recognition software, and voice command recognition software. The package will also come with Nino-specific applications, which will be announced later.

ACCESSORIES: Modem, NiMB rechargeable battery pack.

SAMSUNG

CONTACT your local Samsung dealer or Samsung Electronics America, Phone (USA): 201-229-4000; Fax: 201-229-4019; Web: www.sosimple.com



Samsung Palm-size PC — \$TBA

Hardware: 75MHz NEC MIPS processor; 2MB RAM (expandable to 8 MB) and 4 MB ROM (expandable to 8 MB); 240x340 touch-sensitive back-

lit display; built-in 28.8 modem; CompactFlash slot; serial port; IrDA port; built-in voice record/playback capability. Weighs 3.88 oz (110 g) (plus weight of batteries); size: 3.35 x 5.12 x .78 inches (8.51 x 13 x 1.98 cm); powered by 2 AA batteries; backup battery. Comes with Connectivity cradle, AC adapter, user manuals.

BUILT-IN SOFTWARE: Microsoft Windows CE 2.0 operating system, accessories, and Pocket applications, including Pocket Outlook, Inbox, Mobile Channels and Notetaker. Software on disk or CD ROM: Microsoft Windows CE Services with ActiveSync.

ACCESSORIES: No information at this time.

UNIDEN

CONTACT Uniden; Phone (USA): 888-6-UNIDEN; Web: www.sr.uniden.com

Unipro PC100 Palm-size PC - \$399

Hardware: 75 Mhz CPU; 4MB RAM (expandable to 8MB) and 8MB ROM; 240x320 touch-sensitive, 4 level grayscale screen with back lighting; 28.8kbps internal modem with RJ-11 connector; Type II CompactFlash slot; built-in voice recorder; serial port, IrDA port. Powered by 2 AA batteries.

BUILT-IN SOFTWARE: Microsoft Windows CE 2.0 operating system with Palm-size PC applications, including Pocket Outlook, Inbox, Mobile Channels and Notetaker. Software on disk or CD ROM includes Microsoft Windows CE Services with ActiveSync which

automatically syncs Palm-size PC and desktop Outlook data and other files while in the docking station.

ACCESSORIES: Comes standard with docking cradle, AC/DC adapter, stylus pen with storage, and CD-ROM containing Microsoft synchronization software.

Auto PC

CLARION

CONTACT your Clarion dealer or Clarion Sales Corporation; Phone (USA): 310-327-1999; Fax: 310-327-1999; Web: www.autopc.com or www.clarionmultimedia.com



Clarion Auto PC — \$1,299

Hardware: 60 MHz Hitachi SH3 processor; 8 MB RAM; 8 MB ROM; 8-color, 256 x 64 pixel active magix LCD display with detachable face plate; microphone; CompactFlash slot; IrDA infrared port; serial port; 1-DIN form factor fits in standard dashboard slot; AM/FM stereo tuner; 35 watt x 4 channel; 4 pre-amp outputs; CD/CD-ROM player; Digital Sound Processor (DSP); Universal Serial Bus (USB).

BUILT-IN SOFTWARE: Windows CE 2.0 operating system with voice-activate control; voice memo, address book, highway navigation, vehicle mileage log, text-to-speech messages.

ACCESSORIES: CompactFlash memory card; InfoGation AutoPC file manager; Clarion GPS receiver; map data for Global Positioning System; Clarion USB 6 CD/CD-ROM auto changer; UNGO USB vehicle security system; cellular telephone/modem USB interface, FM side-band wireless receiver & services, ASSIST services, vehicle diagnostic/monitoring interface.



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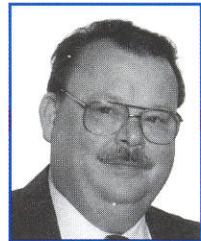
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Andrew Seybold



The Marriage of Communications and Computing

Imagine that you are in a meeting with your notebook computer open in front of you. Suddenly, the cursor begins to blink and a new e-mail message is displayed on the screen. Your computer isn't plugged into anything, your cellular phone is in your briefcase under the table, but you are receiving e-mail over the wireless network. How is this possible?

Over the past ten years, the communications and computer industries have developed new technology products that enable mobile workers to be more productive. As a result, our work force is able to spend more working hours in the field.

Today's mobile workers number some 45 million in the United States alone. They've gone from simple beepers to light-weight mobile phones; from 30-pound lugables to 5-ounce pocketable PCs. The devices are lighter and more powerful, but they're still separate devices with limited ability to work together to support the mobile worker's need to access their own e-mail, connect to their corporate information resources, and perhaps to send and receive faxes. Palmtops and mobile phones alone are no longer enough.

The merger of computing and communications

The computing and communications industries have been working together for the last five or six years to provide mobile workers with the same level of access to their computing data as they have to people via their mobile voice phones. Wireless networks originally developed for voice communications have been expanded to serve as wireless data pipes. Further, in more than a

dozen countries including the United States, data-only wireless networks have been built and put into service.

Fortunately, the new wireless voice systems being implemented today are based on digital technologies, as are the existing data-only networks. In addition, most of the older analog wireless networks are being upgraded to digital. Digital networks are better suited to data, and most are capable of providing both voice and data communications.

With the recent success of palmtop and handheld computers, as well as the emergence of a new generation of still smaller and lighter mobile computers, there is renewed interest within the computing community for wireless data access. But implementing wireless data remains a complex and expensive proposition. Because the many wide-area networks and many different digital standards, computer vendors have been frustrated in their efforts to build wireless communications solutions into their mobile computers. Communications companies have had to find ways to enable their communications devices in the computing world. They've developed a number of solutions, each with its own set of problems.

The communications industry has been trying to find a solution that would enable mobile computing devices to connect to their wireless networks. Computer compa-

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ABOUT THE AUTHOR

Andrew Seybold heads a computer and communications industry consulting and newsletter company, and publishes the well-respected Andrew Seybold's *Outlook* on Communications and Computing. He has an extensive radio communications and computer background, is recognized as one of the top analysts in these fields, and is a founder and President of the Portable Computing and Communications Association (PCCA). Andrew Seybold's *Outlook* can be reached at 408-338-7701, fax 408-338-7806, e-mail: lseybold@outlook.com

A Look at Bluetooth

The Bluetooth wireless technology will use one of the available unlicensed, yet virtually worldwide radio bands—2.4 GHz—and it can support both voice and data. Everything needed to be Bluetooth-capable will be contained in a module that will cost between \$15 and \$20 at first. Driven by volume, the cost should drop to about \$5 by 2001.

The low-power radio module can and will be built into mobile computers, mobile phones, printers, fax machines, and network connection points. While its primary focus is to be the wireless connection between mobile computers and/or between computers and wireless network devices such as cellular phones, Bluetooth supports data speeds of up to 721 Kbps (including a 56 Kbps back channel) as well as three voice channels.

Bluetooth is a collaborative effort between communications and computing companies. Ericsson and Nokia independently were working on similar radio concepts. They understood the need for a partner on the computer side and each approached Intel with the idea. Intel quickly grasped the importance of the concept and has been instrumental in driving the concept to reality. The initial group working on Bluetooth also includes IBM, Toshiba, Motorola, and Palm (3Com).

Bluetooth has been designed to operate in a multi-user environment. Devices can be enabled to communicate with each other by the computer or communications device end user. Up to eight users or devices can make up a "piconet" and ten piconets can co-exist in the same coverage range. Since each link is encoded and protected against both eavesdropping and interference, Bluetooth can be considered a secure short-range wireless network.

The balance of the specifications are as follows*:

Frequency Band:	2.4 GHz (unlicensed ISM Band)
Transmitter Power:	1 milliWatt (0 dBm)
Technology:	Spread Spectrum Hybrid Direct sequence and frequency hopping
Maximum Voice Channels:	3 per piconet
Maximum Data Channels:	7 per piconet
Data speed:	721 Kbps per piconet
Expected System Range:	10 meters (40 feet)
Number of Devices Supported:	8 per piconet, 10 piconets in coverage area ¹
Security:	Yes, link layer
Power Requirement:	2.7 volts
Power Consumption:	30 uA sleep, 60 uA hold, 300 uA standby 8-30 mA transmitting
Module size:	0.5 square inches
Interference:	Bluetooth minimizes potential interference by employing fast frequency hopping 1600 times a second.

*Features currently planned are subject to change without any notice. Actual features may vary.

¹ Graceful degradation of the symbol rate for more than 10 piconets in a given coverage area.

Companies have been trying to find a way to connect their devices to wireless networks. While they share the same goal, each industry has been focusing on its own technology without adequate consideration of the requirements of the other.

At Long Last: Bluetooth!

Eventually, companies from both industries decided that they needed to work together to find a common solution. They knew that there was a demand to merge mobile computing with mobile communica-

tions, and they understood the problems.

The result of their collaboration will be a technology code-named "Bluetooth." Rather than trying to design computers so they will work with any wireless interface card or modem on any frequency, using any one of a number of digital technologies, they decided to design a single, common radio that could be built into every mobile computer?

The computer and radio combination could then be optimized to minimize interference—a task made easier for computer engineers with only one radio. And with a single-radio solution, computer vendors are no longer faced with having to make a network choice or supporting multiple networks.

The Bluetooth communications device is a small, low-powered radio on a microchip. It "talks" to other Bluetooth-enabled products, eliminating the need for cables or infrared beams to connect portable computers, cellular phones, printers, fax machines, etc. Bluetooth will make it possible to connect enabled devices on a one-to-one or one-to-many basis.

Since the chip supports both voice and data communications, applications will range from something as simple as replacing the cable between a mobile computer and cellular phone, to more complex connections involving multiple computers, and extending into hands-free voice communications for wireless phones in vehicles.

A "win" for the computer and communications industry

Bluetooth appears to be a "win" for the computer industry. Most computer manufacturers have been unable to determine which wide-area networks to support. Bluetooth eliminates the need for a wide-area network decision. This can be left to the makers of phones and modems and other wide-area network devices. As an added bonus, the inexpensive built-in radio makes it easy to quickly connect two or more Bluetooth equipped devices locally.

Computer manufacturers have known for some time that wireless communications will be important for mobile computers. The Bluetooth solution provides a short-range ad hoc network, enabling users to send and receive e-mail without a phone and synchronize their calendar and phone book automatically whenever the two devices detect each other's presence.

Bluetooth also appears to be a "win" for the communications industry. Communica-

continued p. 58

The Windows CE Developer's Conference

It was quite an event! From the 6th to the 8th of April more than 2100 developers, engineers, and movers and shakers of the Windows CE world gathered in San Jose, California for the annual Windows CE Developer's Conference. Even when you subtract 150-200 Microsoft people and 50-100 press people, that's still quite a strong showing. Last year's developer conference was less than half that size.

Each morning various Microsoft higher-ups treated us to technical marketing presentations. The emphasis was on the technologies, the status of Software Developer Kits (SDKs), tools for developers, APIs, and the coming attractions for the next six-twelve months. Dave Wecker, Principle Engineer, Microsoft Mobile Electronics Product Unit, did an extended Palm-size PC demo that really gave us an idea of that device's capabilities. Randy Kath, Group Manager, Microsoft Windows CE Tools, talked about the various SDKs and tools. On the final day, *Handheld PC Magazine* columnist Andy Seybold talked about wireless data solutions and hosted a series of demonstrations.

The presentations were only part of the conference. During lunch, and the first three evenings (Sunday through Tuesday), the exhibits hall was open. There were 40-50 OEM manufacturers and vendors displaying Windows CE products and services. By far the largest percentage were hardware and chip manufacturers, system integrators, consultants, and other service companies that focus on helping companies bring Windows CE products to the marketplace (see Windows CE Developer's products and services, page 44). There were very few developers of commercial shrink-wrap applica-

tions. That's an indication of the relative newness of the Windows CE software market, plus the fact that a Windows CE device, right out of the box, has most of the basic applications that a user might want.

Afternoons consisted of as many as six parallel tracks, so it was almost impossible to attend everything of interest (a few sessions were repeated). The tracks focus on writing H/PC applications (for the Handheld PC, Palm-size PC, and Auto PC), Windows CE internals (threads, graphics, communications, synching, object store, and so on), and on embedded systems (writing drivers and shells, and hardware adaptations).

"Embedded Systems" developers well represented

One presentation, on the morning of the first day, asked for a show of hands of embedded, corporate, and commercial developers. Surprisingly, the largest percentage (easily over 50 percent) was embedded developers. Since last fall, when Microsoft introduced Windows CE 2.0 at the Embedded Systems Conference, they have stated that Windows CE is appropriate for embedded systems. At that time they also announced the componentization of the Windows CE OEM Adaptation Kit (OAK) so that system designers can readily pick and chose the pieces they want.

Apparently, embedded engineers and

developers are starting to take notice. Many of the embedded developers were there just trying to figure out what Windows CE was and whether they should take it seriously.

Embedded systems are difficult to define (at least I'm still looking for a clear-cut definition). They typically aren't consumer products, but more specialized for industrial applications. Often, they require predictable real-time performance, including fast and guaranteed interrupt latency and response times, sophisticated scheduling, process and thread capabilities, very high mean times between crashes, and small memory footprints. Many of the developers I talked to were quite skeptical that Microsoft could deliver an operating system with those qualities. Microsoft did promise that within the next six months, they would deliver a beta version Windows CE with better real-time capabilities, more threads and priority levels, and solid performance. They committed to deliver a final hard real-time system within the next year.

In the mean time, the embedded market already has quite a few proven operating systems (in fact, you could say it's a bit fragmented, which may be why so many embedded developers are checking out Windows CE — it may be a unifying OS standard around which they can rally). Several of these vendors are already offering Windows CE layered on top of their own real-time kernel, much like they are doing with Java.

ABOUT THE AUTHOR

Steve Mann is publisher and editor of *Handheld Systems*, a bimonthly developer magazine now in its fifth year, and *The Handheld Computer Almanac*, the definitive product and service reference for the handheld computing industry, now in its second edition. He is also an active developer. To request a sample of *Handheld Systems* go to www.cdpubs.com.

It remains to be seen whether Microsoft can deliver the goods and whether the embedded world will migrate to Windows CE.

Commitment to handheld computing

At the same time that Microsoft is targeting the embedded market, they are also strengthening their commitment to handheld computing. Claiming that more than 500,000 handheld PCs have been sold, they are very optimistic about the continued success of that type of product and also about the new "Palm-size PC."

The company is continuing to work on new developer tools and APIs to fit everyone's needs. They showed Visual Basic for CE, which is now shipping, and the beta Java toolkit. They are migrating more and more Win32 APIs to Windows CE. Unfortunately, for those of you interested in the Palm-size PCs, none of the current memory-hogging tools (VB, Java, MFC, and so on) are available for the smaller form factors. As their memory capacities increase, Microsoft may migrate larger technologies onto the pocketables - it depends to a certain extent on what their OEM partners and developers request. Since the Palm-size PCs have only just shipped, it's a bit tough to tell what's going to happen.

Personally, I think Microsoft is taking too much of a shotgun approach to Windows CE. According to them, it's good for hand-

held computers, embedded systems, automobiles (I really don't get that market, but then, I don't own a car), and any other type of consumer or industrial device you can think of. To mix my metaphors, they're tossing a plate full of pasta at the wall to see how much of it will stick. I hope they get around to identifying the chunks that stick and get on with it.

Overall, the Windows CE Developer's Conference was a well-run, informative event, although a bit expensive. (For \$1195 you do get one of the computers formerly known as the Palm PC, but that's still expensive.) Like most events, the sessions were only part of the story. You can certainly learn Windows CE programming without paying that kind of fee. You can't, however, experience the lunch time gossip and speculation, the networking, the overall feel you get for what Microsoft and its partners are up to, without attending. Microsoft announced they plan on hosting this event every spring. Next year's will undoubtedly be bigger and better (and maybe even livelier). ■

Andrew Seybold *continued from P. 56*

tions companies will no longer have to build external cables and PC cards to connect mobile data devices to their wireless phones. Nor do they have to build wireless network cards for the mobile user to interface with company computers. A Bluetooth module built into the mobile phone or connected to the network will enable these devices to send and receive data to and from any Bluetooth-equipped mobile computer.

The "compelling" reasons for incorporating Bluetooth are to wirelessly connect mobile computers to cellular phones, and to establish small workgroups quickly and easily. As the number of Bluetooth-equipped devices grows, so will their uses. Printers, fax machines, LANs, and more will be able to communicate with each other.

I expect to see most other two-way wireless devices equipped with Bluetooth, including: cellular phones, two-way pagers, and wireless data-only terminals. I also expect to see many computer companies build add-in and add-on modules to enable existing wireless and computing combinations.

Bluetooth is a universal solution to what has been a perplexing connectivity problem. I am really excited about this technology and what it will mean to mobile computing and communications. To me, Bluetooth represents a no-brainer concept at a reasonable price. I believe that any computer or communications vendor building mobile devices or accessories should embrace this concept and these products - immediately if not sooner!

Bluetooth has been designed to solve a number of connectivity problems experienced by mobile workers and consumers. And it does so in a simple, neat package that is inexpensive—the OEM only pays for the cost of the module.

Bluetooth was well conceived, and I believe that it will be well received. I will certainly encourage all of my clients to make Bluetooth a part of their strategy as they move forward. My only disappointment is that I have to wait until mid-1999 before I can have a Bluetooth-enabled set of mobile computing and communications devices. ■

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PowerCD Handheld PC Magazine July/August 1998

Windows CE shareware and freeware mentioned in this issue and available on our PowerCD supplemental CD ROM and at our website: www.thaddeus.com

Program	Description (shareware/freeware status)	Page No.
Win CE Services 2.1 Upgrade	Adds features and Palm-size PC support (freeware).	24
Win CE 2.0 Service Pack 1	Improves functioning of CE 2.0 H/PCs (freeware).	24
PowerToys	Free utilities for CE 2.0 H/PCs (freeware).	25
TrueSync	Lets HP 360LX and 620LX sync. With REX card (freeware).	26
GridCalc	A "situational awareness" program for DOS PCs (freeware).	22
Windows CE on the battlefield	Thesis on the suitability of Windows CE on the Battlefield (freeware).	22
eWallet	Secure card information database. (demo).	27
ListPro demo	Trial version of list keeper (demo).	27
HPCVault Deluxe	Extract single files from Windows CE backups (demo).	28
MediHPC	Connect H/PC to Meditech host (demo).	37
pkHpc	Lets you connect H/PC to Pick, Stratus and Unix hosts (demo).	37
vxHpc	Lets you connect H/PC to many systems (demo).	37, 47
Whack Force	Lets you download Web pages from your H/PC (pre-release demo).	37
PipeGame	Game of strategy and plumbing (demo).	39
Pocket Universe	Astronomy software for H/PC (demo).	40
Abner pocket scorecard	Turns your H/PC into a pocket scorecard (pre-release demo).	41
EZTaskMan	Task manager for H/PCs (demo).	42
PocketSwap	Manage and change desktop wallpaper (demo).	42
SpaceWatch	Lists files and storage space available (freeware).	43
SoundWidget	Lets you adjust sound with tray icon (freeware).	43
Storage Card	Shows info. about memory card storage space (freeware).	43

Project Gutenberg Etexts on this issue's Power CD

Little Lord Fauntleroy (Frances Hodgson Burnett); The Cost (David Graham Phillips); How To Tell Children Stories and Stories To Tell To Children (Sara Cone Bryant); The House Behind The Cedars (Charles W. Chesnutt); Bride of Lammermoor (Sir Walter Scott); The Mountains (Stewart Edward White); In The South Seas (Robert Louis Stevenson); The Red Badge of Courage (Stephen Crane); The Errand Boy (Horatio Alger); Quest of the Golden Girl (Richard le Gallienne); The Price She Paid (David Graham Phillips).



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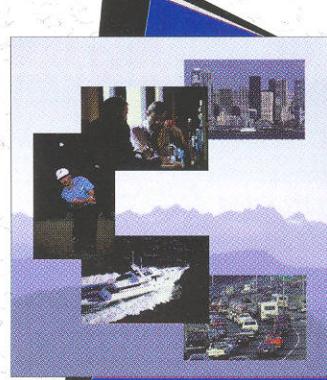
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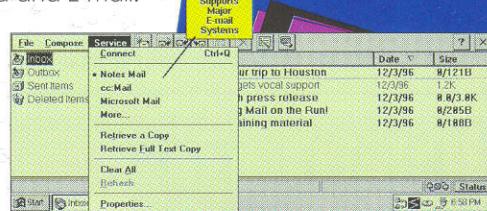
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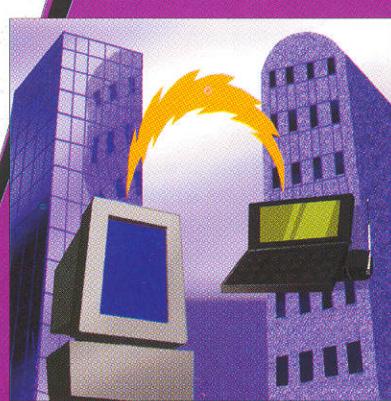
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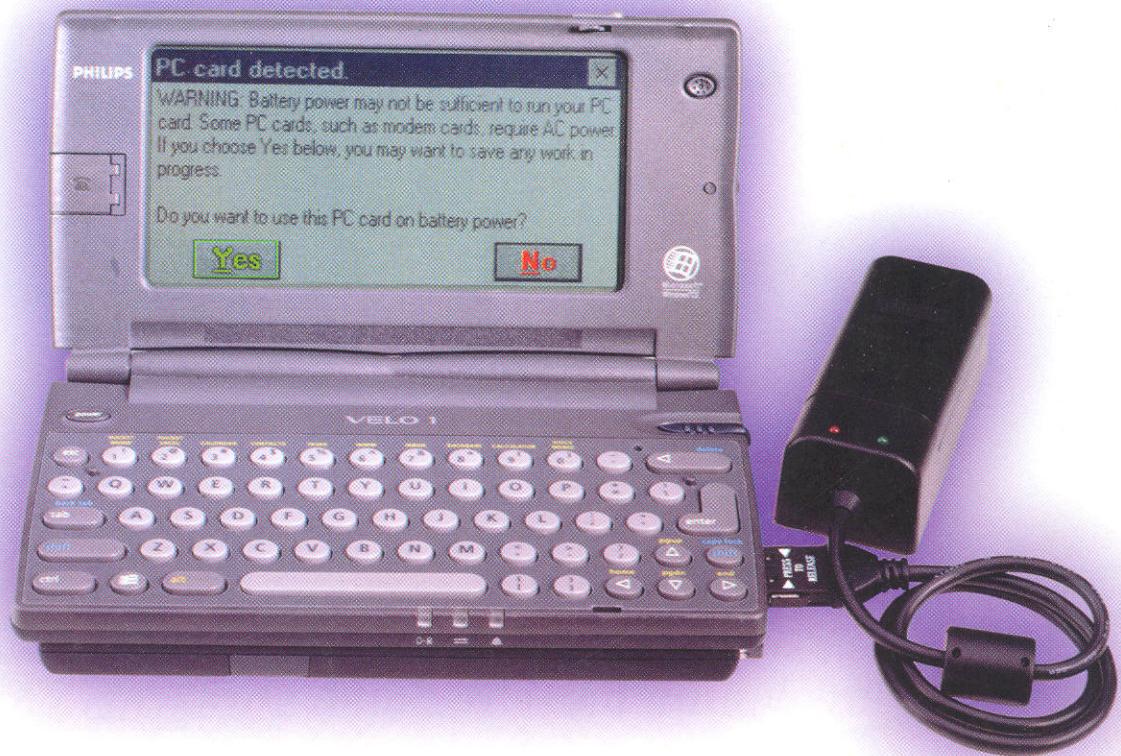
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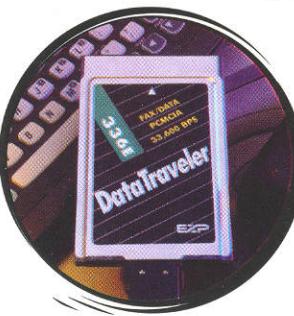


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